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UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
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Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Hobson, Richmond P., Jr. GRASS BEYOND THE MOUNTAINS. J. B. Lippincott Co. 256 p. 1951. $3.75.
An extremely favorable review of this book was quoted in WR 69, p. 2. A better informed reviewer (R. M. Patterson, in The Beaver, June 1952) strongly implies that the book, while entertaining, contains a great deal of hokum and is of limited documentary value.

Holbrook, Stewart H. FAR CORNER: A PERSONAL VIEW OF THE PACIFIC NORTHWEST. Macmillan, N. Y. 1952. $3.75. [From review by James Stevens, Journal of Forestry 50(8).]
A veteran logger gives a vivid and picturesque account of the big timber and the business and labor associated with it. Though rich in anecdote, the book stresses the vigor and drama of the forest itself: the incessant life and death struggles of plants and animals, fires, insect pests, and the rapid reversion toward forest that drives stump-ranchers from their hard-won acres.

Kauffman, Erle, editor. THE CONSERVATION YEARBOOK, 1952. The Conservation Yearbook, 1740 K Street N. W., Washington 6, D. C. 288 p. 1952. $5.00. [From Nature Magazine 45(8).]
"...annual directory and guide to agencies, commissions, boards, associations, foundations, societies and other organizations concerned with the conservation of organic natural resources, to the men and women who plan and direct the conservation program, and...an authoritative source of information of the progress of this program." This edition, the first, contains a vast amount of information.

Levi, Herbert W. BIBLIOGRAPHY ON THE INTRODUCTION OF EXOTICS. Author, University of Wisconsin Extension Center, Wausau, Wisc. 1-3 p. 1952?
Lists 75 references, many of them recent.

WILDLIFE--EDUCATION

Beach, Grace O. READIN', WRITIN' AND CONSERVATION. Pennsylvania Game News 23(4): 4-10, illus. July 1952.
Report on a successful cooperative experiment in teaching general conservation as a high school class.

Eschmeyer, R. W. FREDDY FOX SQUIRREL. CHARLEY COTTONTAIL. BOB WHITE. TOMMY TROUT. BILLY BASS. BOBBY BLUEGILL. Each illus. Fisherman Press, Inc., Oxford, Ohio. Paper covered, 50¢ each; cloth, $1.50 each.
These 6 reasonably priced books, intended primarily for children from 8 to 14, embody a new approach. Animal biographies are used as a vehicle for teaching facts and principles of wildlife management. Because of this, reviewers have welcomed them warmly, but certain adults consider them overly realistic for children: the main character may wind up in the pan after his brothers and sisters have starved to death or perished in fires. The few children sampled have read the books with interest and without complaint. After reading 2 of the books (1 and 4 in list above) the present reviewer admires the accuracy and value of the material and the simplicity of the writing. The impression remains, however, that Eschmeyer has sacrificed some of the reader's interest in the animal characters in a vigorous effort to avoid Bambiism and anthropomorphism; and that the biological lessons occasionally interrupt the story rather than blending into it. Readers interested in using the biography-management approach on a more adult level might study "Whirring Wings," reviewed in this issue under "Quail."

Flugger, Annette L. THE ROLE OF CONSERVATION IN THE EDUCATION PROGRAM OF LATIN AMERICA. PART IV. CONSERVATION EDUCATION IN THE NORMAL SCHOOL. Conservation in the Americas no. 12: 36-65. April-July 1952.
Suggestions for working conservation into the curriculum and for effective presentation; lists of activities and field trips; bibliography; outlines for courses on natural resources, land resources, wildlife conservation as taught in a biology class, and water resources.

WILDLIFE--EDUCATION--Continued

Glover, Fred A. REPORT ON WILDLIFE MANAGEMENT, FISHERIES AND CONSERVATION CURRICULA IN THE CALIFORNIA STATE COLLEGES. State of California Department of Education. 1-26 p. June 1951.

Information and views given here should be weighed by all concerned with introducing or administering wildlife curricula. A discussion of employment possibilities leads to the conclusion that more than enough men are being trained and that emphasis should be on quality. The bulk of the paper consists of lists of courses students should have and detailed descriptions of what the contents of wildlife courses should be. This includes study topics, references, and statements of equipment and facilities needed. Eight specialized wildlife courses are thus characterized. On the basis of these standards the offerings of California state colleges are evaluated. In conclusion, the author deplores the offering of partial wildlife training at many schools and urges fully professional training at a few schools having suitable facilities. [Too many schools across the country provide the partial training the author decries; very few measure up to his standards for adequate professional schooling.]

Hjelte, Charles. TOOLS FOR TEACHING CONSERVATION. Colorado Department of Game and Fish, Educational Pamphlet no. 1: 1-32, illus. No date. [1952?]

Lists of references for teachers, and for children of different ages; uses of photographs, filmstrips, and movies; where to get these visual aids, with lists of good ones; similar information for recordings; suggestions for field trips and field projects.

Lantz, A. W. 4-H PROJECTS IN FORESTRY AND WILDLIFE. New Jersey Extension Service, Rutgers University, Leaflet no. 75. 4 p., illus. 1952. [From Journal of Forestry 50(8).]

Lyon, Richard O. MANUAL OF WILDLIFE CONSERVATION FOR 4-H CLUB MEMBERS. University of Illinois, Extension Service in Agriculture and Home Economics. 1-63. illus. March 1952.

An attractive pamphlet that provides good background and tells many things young farm people should know about wildlife and its management. It also proposes various projects, some for nature study, some for management. Management measures seem to require cooperation of adults more than the author implies, but probably no more than he realizes. Certainly the suggestions will set a boy thinking, working, and influencing his family in the right direction.

Rawley, Edwin V. EVALUATION OF EXTENSION WORK IN WILDLIFE MANAGEMENT AND THE DEVELOPMENT OF A GUIDE TO WILDLIFE EXTENSION WORK IN UTAH. M. S., Utah State Agricultural College, June 1952.

WILDLIFE--TECHNIQUES

Bailey, Norman T. J. IMPROVEMENTS IN THE INTERPRETATION OF RECAPTURE DATA. Journal of Animal Ecology 21(1): 120-127. May 1952.

A statistical work treating different methods of estimating population size and determining the reliability of the results.

Beck, John R. A SUGGESTED FOOD RANK INDEX. Journal of Wildlife Management 16(3): 398-399, illus. July 1952.

For expressing results of studies of crop or stomach contents. Figures on volume, occurrence, and specific gravity of a food are arithmetically combined to give the index number.

Cosper, P. M. HUNTER REPORT CARD PROCEDURES IN ARIZONA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 168-169 p.

WILDLIFE--TECHNIQUES--Continued

Crane, Harold S. HUNTER REPORT CARD PROCEDURES IN UTAH. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 106-108 p.

Edson, Marshall C. GAME POPULATION TREND CENSUS TECHNIQUES. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 147-150 p.

Greenhalgh, Clifton M., and Lynn R. Nielson. THE USE OF PUNCH CARDS IN UPLAND GAME BIRD MANAGEMENT. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 131-134 p.

Griffin, Donald R. RADIOACTIVE TAGGING OF ANIMALS UNDER NATURAL CONDITIONS. Ecology 33(3): 329-335. July 1952.
Discusses in detail the properties of suitable radioisotopes, the maximum permissable radioactivity of the tag, and practicable range of detection. Proper instruments are mentioned. The method was used successfully for protracted, automatic recording of the time a bird spent on its nest. The radioactive material was placed in a capsule attached to the leg band. The method has two inherent limitations: only one animal at a time can be marked distinctively in any one area; and there are limits to the distance at which the radioactivity of the tag can be detected.

Hiltunen, Eero. ON THE RELIABILITY OF THE HUNTING LICENCE STATISTICS (Metsästyslipputilastojen luotettavuudesta). Suomen Riista 7: 72-81. 1952.
Data obtained from interviews with hunters give the best information on harvests, although about 15% too low. Data obtained from hunters who report on last year's kill when applying for a new license are unreliable, indicating far too small a kill. Good hunters underestimate their kills, while poor hunters overestimate their own. Good and poor hunters tend to counterbalance one another in the data, but information from license reports still is very inaccurate. Less than 39% of the furbearer catch is thus reported.

Hjersman, Henry A., and Frank M. Kozlik. GAME TAKE SURVEYS IN CALIFORNIA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 158-164 p.

Lawson, Louie. THE VALUE OF CHECKING STATIONS IN RESEARCH INVESTIGATION. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 145-146 p.

Low, Jessop B. THE ROLE OF CHECKING STATIONS IN STUDENT TRAINING AND WILDLIFE RESEARCH. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 142-144 p.

Thompson, W. K. THE VALUE OF CHECKING STATIONS IN WILDLIFE RESEARCH. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 138-141 p.

Wilson, H. Lee, and Edward V. Berard. THE USE OF AERIAL PHOTOGRAPHS AND ECOLOGICAL PRINCIPLES IN COVER TYPE MAPPING. Journal of Wildlife Management 16(3): 320-326, illus. July 1952.

WILDLIFE--FOODS

Korschgen, Leroy J. A GENERAL SUMMARY OF THE FOOD OF MISSOURI PREDATORY AND GAME ANIMALS. Missouri Conservation Commission. 1-61 p. July 1952.
The title scarcely indicates the broad scope and detailed nature of this publication. There are given here tabular data (with discussions) on the

WILDLIFE--FOODS--Continued

foods of 54 species as revealed by analysis of 13,189 samples. The tables are quite detailed, with foods usually listed to species and their occurrence indicated both by frequency and per cent by volume. The number of samples upon which a table is based is always stated. Species treated are: 15 ducks, Canada goose, bobwhite, dove, deer, fox and gray squirrels, coyote, bobcat, red and gray foxes, house cat, mink, opossum, spotted skunk, raccoon, 6 hawks, 5 owls, bullfrog, crow, bass, catfish, redwing blackbird, blacksnake, starling, land terrapin, upland plover. Few samples were examined for some animals, including all those listed after the crow. It is perhaps unfair to single out a part of the paper for special mention, but the author's conclusion after examining 71 house cat stomachs is of general interest: "The fact that nearly two-thirds (63.4%) of the cats' diet consists of mice, rats and shrews should label the house cat as the greatest mouser among the predators, and other contents fail to confirm the detrimental feeding habits attributed to this animal."

WILDLIFE--NATURAL AREAS

Fitch, Henry S. THE UNIVERSITY OF KANSAS NATURAL HISTORY RESERVATION. University of Kansas, Museum of Natural History, Miscellaneous Publication no. 4: 1-38, illus. Feb. 1952.

The Reservation is a 590-acre tract of woods and fields near Lawrence. Recovery of the flora and fauna has been relatively rapid since 1948, when the area was protected from grazing, timber cutting, and hunting. Habitats are diversified and there is a good variety of plants and animals. The Reservation is used for research and teaching in ecology and natural history. Methods and some projects are described. Plants are listed, with indication of status of woody species. Species of vertebrates are also listed with indication of status. Two maps show the topography, ecology, and subdivisions of the Reservation, and photographs show some of the habitats.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Tinbergen, N. "DERIVED" ACTIVITIES; THEIR CAUSATION, BIOLOGICAL SIGNIFICANCE, ORIGIN, AND EMANICIPATION DURING EVOLUTION. Quarterly Review of Biology 27(1): 1-32, illus. March 1952.

A study of instinctive behaviorisms, especially in birds, and their modifications through interaction with other drives and with social and environmental factors. Many examples are cited. Theory and interpretation are emphasized.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Cahalane, Victor H. WILDLIFE RESOURCES OF THE NATIONAL PARK SYSTEM. A REPORT ON WILDLIFE CONDITIONS IN 1951. U. S. National Park Service. 1-135 p. March 1952.

Plans, problems, and status of many kinds of animals in all parts of the national park system.

Gilmore, Raymond M. FAUNA AND ETHNOZOOLOGY OF SOUTH AMERICA. In Handbook of South American Indians, Smithsonian Institution, Bureau of American Ethnology Bulletin 143, vol. 6. 345-464 p., illus. 1950.

A great deal of information on the more important animals of South America, from mammals to insects, is here brought together in readable yet technical form. Emphasis, of course, is on the relation of these animals to man, both past and present. There are, for example, long discussions of the origin and classification of the domesticated native animals, the game management methods of the Incas, and the harvesting of turtle eggs. Anyone concerned with the natural history of Neotropica should find material of value to him in this work, and some may find extensive treatments of subjects in which they are interested. References in the reprint cite only author and date; the full references to which these refer may be found in the back of the complete volume.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

Hustich, Ilmari, editor. THE RECENT CLIMATIC FLUCTUATION IN FINLAND AND ITS CONSEQUENCES. Helsinki. Fennia 75: 1-128, illus. 1952.
A symposium of 9 leading papers and several commentaries, all in English. Long-term climatic fluctuations are treated, but emphasis is on the recent gradual warming that culminated in 1935. Papers in this symposium discuss the climatic changes and their possible causes, and their effects on plants, small game, other birds and mammals, insects, forest growth, fisheries, and crop production. In general, warming favored crops, tree growth and seeding, and farm game. Southern forms moved northward and increased in number, while northern forms became scarcer in the south. It is pointed out that such climatic fluctuations are not uniform over the earth and are of relatively short duration. The fluctuations and their effects are demonstrated by maps and graphs. Many references, especially to the extensive Finnish literature on cycles.

Illingworth, Frank. WILD LIFE BEYOND THE NORTH. Scribners, N. Y. 168 p., illus. 1951. $3.75.
An uncritical review of this book was quoted in WR 69, p. 7. A review by Clarence Tillenius (The Beaver, June 1952) grants that the volume contains much good material, but criticizes the author's acceptance of some questionable anecdotes about wild animals.

Kalela, Olavi. CHANGES IN THE GEOGRAPHIC DISTRIBUTION OF FINNISH BIRDS AND MAMMALS IN RELATION TO RECENT CHANGES IN CLIMATE. Fennia 75: 38-51, maps. 1952.
In English. Part of a symposium (see Hustich, above). The author shows that during the warm-up that began in the 1800's and culminated in the 1930's many southern birds and mammals moved northward or became commoner in the north. Some migrated earlier. Many northern forms declined at their southern limits. Waterfowl were forced northward by drying of lakes on the steppes. Evidence is given that similar population and distributional changes also occurred in past centuries as the climate fluctuated.

Melander, K. R. ON THE OCCURRENCE OF GAME ANIMALS IN FINLAND IN THE 14TH AND 15TH CENTURIES (Riistaeläinten esiintyminen maassamme 1500- ja 1600-luvuilla). Suomen Riista 7: 120-168. 1952.
Long article in Finnish. Author's English summary with only page references omitted: "The article summarizes the information on the occurrence of game animals in Finland in the 1500's and 1600's obtained from account books and judicial documents of that time. The following species are dealt with: bear, wolf, lynx, red fox and arctic fox including the occurrence of black and blue foxes, wolverine, beaver, squirrel and hare, moose and roe-deer, and game birds including swan and wild goose."

Nagel, W. O., editor. WILDLIFE AND THE SOIL. Missouri Conservation Commission. 1-44 p., illus. No date. [1952?]
Consists of 8 short papers written clearly and simply to show the public how all animals, including man, are dependent on good soil and plant conditions. It contains much solid, factual information and might well be required reading in conservation classes. A statement by I. T. Bode will surprise many readers: "...there are areas that no longer have the fertility to grow good quail foods, where mice have become very abundant...Pound for pound, these areas are supporting more vegetation, and more animals, than they did when fertile; but the varieties are inferior, and the quality is less. The same is true of water areas..." Component papers are: Foreword, by I. T. Bode; The Soil as the Basis of Wildlife Management, by W. A. Albrecht; Relationship of Soils and Wildlife, by B. T. Crawford; Wildlife Cover Program, by E. B. Biffle; Forests and the Land, by W. E. Towell; Water, Land and Wildlife, by W. O. Nagel; And the Land Needs Wildlife, by W. O. Nagel; Summary, by M. O. Steen.

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

Siivonen, Lauri. ON THE INFLUENCE OF THE CLIMATIC VARIATIONS OF RECENT DECADES ON GAME ECONOMY. Fennia 75: 77-88, maps and graphs. 1952.
In English. Part of a symposium (see Hustich, p. 6, this issue). The warm period that reached a peak about 1935 favored farm game, which is practically limited to Southern Finland, and adversely affected northern animals. It had little effect on forest animals, which are the most important element of Finnish game. Colder weather in the 1940's set back southern animals and favored northern ones. Heavy snows of severe winters are one of the most adverse factors for farm game, chiefly because food is deeply covered.

Snyder, Robert L. AN ECOLOGICAL STUDY OF THE CONEMAUGH RESERVOIR IN THE PRE-IMPOUNDMENT PERIOD. M. S. thesis, Pennsylvania State College, June 1952.

WILDLIFE--NUMBERS AND NUMBER FLUCTUATIONS

Kalela, Olavi. EINIGE KONSEQUENZEN AUS DER REGIONALEN INTENSITÄTSVARIATION IM MASSENWECHSEL DER SÄUGETIERE UND VÖGEL. Ann. Zool. Soc. Zool. Bot. Fennicae "Vanamo," Helsinki, Vol. 14(5): 1-31, illus. Nov. 1951. [From Journal of Mammalogy 33(3).]

WILDLIFE--PARASITES AND DISEASES

Cheatum, E. L. DISEASE AND PARASITE INVESTIGATIONS. New York State Conservation Department, Final Report FR Project 1-R, Supplement E: 1-72, illus. July 1952.
This is a detailed report of all work on pathology done by the author in New York prior to 1944. It is not merely a summary or review, but a factual, quantitative report on a number of topics. Discussions and conclusions are supplied for each section. Subjects are: Pheasant - Incidence and importance of diseases and parasites in N. Y.; incidence and importance of diseases and parasites among broods on Robins Island; significance of differences in weight and skeletal size among pheasants in N. Y. Cottontail - Incidence and importance of diseases and parasites in N. Y.; incidence and importance of diseases and parasites on Fishers Island; local disease conditions in Chautauqua, Wayne, and Jefferson Counties; significance of differences in weight and skeletal size in N. Y. Deer - Incidence and importance of diseases and parasites in N. Y.; relation of diseases and parasites to winter mortality in N. Y.; reproductive physiology of deer in N. Y.; significance of differences in weight and skeletal size in N. Y. Waterfowl - Incidence and importance of diseases and parasites of ducks in N. Y.; investigation of Leucocytozoan disease in certain N. Y. populations; blood fluke investigation; effect of lead poisoning on reproductive capacity of mallard drakes. An appendix gives information on methods and techniques employed. Bibliography of 4½ pages.

Muroma, Eero. ON ANIMAL TUMORS.(Eläimillä tavattavista kasvaimista). Suomen Riista 7: 82-86, illus. 1952.
In Finnish. Author's entire English summary: "The article deals with general aspects relating to various types of tumors in animals, such as their causes, occurrence and significance as diseases of game. They form only a very negligible proportion of the various diseases of game in Finland."

Williams, Ralph B. EPIZOOTIC OF RABIES IN INTERIOR ALASKA 1945-47. Canadian Journal of Comparative Medicine 13(6): 136-143, map. 1949. [From Polar Record 6(44).]
"Problem of rabies; sources of infection."

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Hanson, William R. EFFECTS OF SOME HERBICIDES AND INSECTICIDES ON BIOTA OF NORTH DAKOTA MARSHES. Journal of Wildlife Management 16(3): 299-308. July 1952.
Report of experiments showing damage done to wildlife or plants by 2,4-D

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.--Continued

amine, 2,4-D ester and oil, chlordane, DDT and oil, toxaphene and oil. There is great danger of small marshes receiving these treatments in the course of treating agricultural areas by plane.

Jones, Glenn. HAIL DAMAGE TO WILDLIFE IN SOUTHWEST OKLAHOMA. Wilson Bulletin 63(3): 166-167. Sept. 1952.
Records of many animals killed by an exceptionally heavy hail storm. The animals include: hawks, crows, owls, doves, bobwhites, cottontails, jackrabbits, and a wood rat. Three coveys of dead bobwhites were found. Many migrating hawks, especially Swainson's, were killed. Shelterbelts were stripped and pruned and areas of bark were torn from the trees.

Surber, E. W. and A. F. Bartsch. ARE CHEMICALS KILLING OUR FISH AND WILDLIFE? Outdoor America 17(5): 4-11, illus. Sept.-Oct. 1952.
Reviews the harm that insecticides and herbicides have done to animals, particularly fish, and points out that when these chemicals are used properly they usually do little harm. Trouble arises from over-doses or inadequate safeguards. There are now enough legal controls concerning these chemicals. What we really need is more specific chemicals with fewer side effects, and thorough study of the wildlife effects of each new chemical before it is released for use. The publisher (Isaak Walton League, 31 N. State St., Chicago 2, Ill.) will supply a mimeographed list of 42 technical articles used in the preparation of this paper.

Rawls, Charles K., Jr. CAUTION, POISON. Fisherman 3(8): 10-12, 32-35, illus. Aug. 1952.
Effects of modern insecticides, especially DDT, on aquatic animals. A well balanced treatment, with materials drawn from many sources.

WILDLIFE--MANAGEMENT--GENERAL

Brown, E. K. DIFFICULTIES ENCOUNTERED IN COORDINATING STATE DEPARTMENT AND PITTMAN-ROBERTSON ACTIVITIES. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 135-137 p.

Glading, Ben. WHAT IS WRONG WITH PITTMAN-ROBERTSON IN THE WEST. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 31-35 p.

Gordon, Seth. THE FUTURE PROSPECTS FOR FISH AND GAME IN THE WEST. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 50-59 p.

Knott, Norman P. LAND ACQUISITION AS A MANAGEMENT TOOL IN THE WESTERN STATES. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 93-98 p.

Miller, Townsend. TOWARD BETTER HUNTING. Texas Game and Fish 10(10): 8-11, illus. Sept. 1952.
Records of transplants of whitetail deer, mule deer, and turkey, 1951-52, Texas. Discussion of program.

Office of River Basin Studies. FISH AND WILDLIFE CONSERVATION IN RIVER BASIN DEVELOPMENT. U. S. Fish and Wildlife Service. 1-67 p., illus. June 1952.
Anyone concerned with the effect of water development programs on wildlife will find much solid but readable information here: how wildlife values of an area are estimated; how development programs affect refuges and other wildlife areas; what recommendations are made by the Fish and Wildlife Service and what the engineering agencies do about these recommendations. Numerous examples are given. The picture is not all black, for with the aid of public

WILDLIFE--MANAGEMENT--GENERAL--Continued

opinion some projects can be blocked and some can be altered to benefit wildlife. Nothing can be done about others. The annual loss of natural habitat is great, and there is every reason to believe that basin development projects will continue full blast. "Hardly a major stream in the country has escaped the attention of various planning agencies." From 1946 through March 1952 the Office of River Basin Studies prepared 1,059 reports on various projects. These are listed by states in an appendix. Abstracts of each have been prepared and are available on request.

Reed, Robert A. A WILDLIFE MANAGEMENT PLAN FOR ALLEGANY COUNTY. Printed for Federation of Sportsmen's Clubs of Allegany County, New York, by Belmont Dispatch, Belmont, N. Y. 1-40 p., illus. No date. [1952.] Obtainable from author, U. S. Soil Conservation Service, Court House, Belmont, N. Y.

This pamphlet, believed to be the first of its kind, tells what the wildlife needs and potentialities of the county are, what can be done for each class of game, and where technical aid can be gotten. It begins with a description of the county and discussions of the local, state, and federal conservation organizations active there. It then tells how much is needed and how much has been accomplished in planting rose hedges, protecting stream-banks, and the like. Next are sections of practical advice and biological information on marsh management, farm ponds, cottontails, ruffed grouse, waterfowl, Hungarian partridge, snowshoe hare, wild turkey, beaver, deer, and pheasant. Values and management of certain wildlife shrubs are discussed at length. In general, the paper is biologically sound, with few concessions to restocking, and with emphasis throughout on habitat improvement. Predators and fur-bearers (other than muskrat) are not mentioned.

Shoemaker, Carl D. THE PITTMAN-ROBERTSON FEDERAL AID FUND AND SOME OBSERVATIONS ON THE WAY IT IS EXPENDED. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 19-30 p.

Siivonen, Lauri. HUNTING AND GAME ECONOMY. [Reprinted from] Suomi, a general handbook on the geography of Finland. [Publisher not indicated on reprint.] 503-513 p., maps and graphs. 1951?

In English. Review of conditions in Finland. Present distribution and average annual take are given for fur and game forms. Former distribution and take are discussed for several fur bearers. The effect on animals of short term cyclic changes and longer term climatic changes are stated briefly. The organization and financing of hunting, conservation, and game research groups in Finland are outlined. Except in Åland, each hunter must belong to an official game preservation association. These associations undertake the actual management work on the land. The state makes regulations and provides research and warden service. The current trend in regulations is to take greater advantage of cyclic increases, and to recognize more fully the regional differences in population levels.

Straus, Michael W. RECLAMATION'S SERVICE TO FISH AND WILDLIFE. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 7-18 p.

Voipio, Paavo. IS THE SO-CALLED RENEWAL OF BLOOD NEEDFUL? (Onko ns. veren uusiminen tarpeellista?) Suomen Riista 7: 7-21, illus. 1952.

In Finnish, with English summary. The author believes that very small, isolated populations of game suffer genetically, presumably because of genetic drift and inbreeding. He urges the introduction of new breeding stock when local populations are isolated and reduced by cyclic lows or other factors. [Evidence to support this belief is not given in the summary. On theoretical grounds, it may be argued that small, isolated populations are at least as likely to undergo adaptive selection as they are to deteriorate genetically.] The author also criticizes the common practice of harvesting males and leaving a disproportionate number of females. If a population that has been hunted this

WILDLIFE--MANAGEMENT--GENERAL--Continued

way is augmented by a release consisting mostly of females, "it aggravates the abnormal sex ratio and does not remove the psychological drawbacks caused by the disproportionate scarcity of males compared with females." It may also lessen the genetic value of the release. The normal sex ratio in gallinaceous birds, and probably in hares, is even or slightly male-dominated. [Apparently the author is not speaking of species that are habitually polygamous, as pheasant and deer, where heavy shooting of males may be beneficial to the population.]

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Anonymous. GAME HARVESTS FOR 1951. Washington State Game Bulletin 4(3): 3, 8. July 1952.
Computed kill of various types of large and small game in Washington, 1949-51. 1951 deer and elk kill is given in detail, with the kill of antlered animals and does and fawns listed separately for each county. On page 8 are 1951 pheasant hunting statistics for each county.

Gresham, Grits. WHY CONTROL HUNTS? Arizona Wildlife-Sportsman 23(8): 14-19, 73, illus. Aug. 1952.
Arizona is making extensive use of controlled hunts in game areas that canhot withstand unrestricted shooting. The author tells why and how these hunts are arranged, and discusses certain ones.

Hiltunen, Eero. HUNTING IN TERVO COMMUNE IN 1951 (Metsästys Tervossa v. 1951). Suomen Riista 7: 39-47. 1952.
In Finnish, with English summary. Many hunting statistics are given, with indication of the harvest or status of game and fur animals.

Linduska, J. P. ARE HUNTING LAWS OBSOLETE? Hunting and Fishing 29(10): 16-18, 66-68, illus. Oct. 1952.
Upland game is often over-protected. In areas favorable to the animals, 25% of the deer and 50% of such animals as quail and cottontail may be shot each year. Heavy harvesting encourages growth and reproduction and favors survival of individuals not shot. Grouse in the northern states undergo cyclic fluctuations, but it does no good to close the season during lows; this merely results in thousands of wasted birds. During highs, extremely heavy harvests should be made. This can do no harm, and since peak populations are often followed by very low ones it might do some good in weakening the amplitude of the cycle. Local trials of this approach are highly desirable. British grouse experts have found it necessary to hunt each fall population down to the March carrying capacity if good hunting is to be perpetuated. Lighter harvesting of British red grouse means not merely waste but poor future shooting, sometimes for years. The system should be tested here. The author cites many figures and examples.

WILDLIFE--MANAGEMENT--FARM

Anonymous. PONDS FOR FISH AND WILDLIFE PRODUCTION. 3rd revision. Missouri Conservation Commission. 1-33 p., illus. Reprinted 1952.
A practical, helpful bulletin. Part I discusses multi-purpose ponds under the following headings: Selecting the Site; Planning and Construction; Care of the Watershed; Clearing Muddy Waters; Plants for Ponds; Pond Sealing. Part II discusses ponds for fish production under the headings: Selection of a Pond Site; Aquatic Plants, Use and Control; Water Fertilization; Fish Stocking, Management, Harvest.

Dugan, R. Franklin. FARM FISH PONDS IN WEST VIRGINIA. West Virginia University Agricultural Experiment Station Circular 84. 1-35 p., illus. April 1952.
Construction considerations; costs; stocking; fertilization; weed control; developments around pond; harvesting fish; miscellaneous values of ponds.

WILDLIFE--MANAGEMENT--FARM--Continued

Durell, James S. FARM GAME HABITAT RESTORATION IN KENTUCKY. Kentucky Department of Fish and Wildlife Resources, Leaflet no. 3: 1-32, illus. July 1952.

"This leaflet has been prepared as a handbook for those interested in farm game restoration in Kentucky. It contains information on the use, management and value of bicolor lespedeza for quail food and of multiflora rose for wildlife cover and farm fences." The value of serices for quail food and cover is stressed and its application is outlined. "Other plants briefly discussed in the leaflet are Siberian peatree, ninebark, false indigo, pines, locust, walnut, Russian mulberry, Russian olive, winterberry, bayberry and persimmon. This revision of leaflet Number One is based on four years' experience and observations in Kentucky."

East, Ben. QUAIL ON THE SIDE. Outdoor Life 110(2): 38-39, 89-92, illus. Aug. 1952.

The true story of how Len Hall took over a run-down Ozark farm and by the application of intensive soil conservation and game management measures built up a fine stock farm with an abundance of game. At the beginning, in 1946, there were 2 quail coveys; in 1950 there were 14. Hunting for other forms of game has also improved greatly. Game management methods employed are described. Hall won several conservation awards for his achievement.

Karstens, Gerald A. FARM PONDS. Purdue University, Agricultural Extension Service, Lafayette, Indiana, Extension Bulletin 369. 1-12, illus. 1952.

Engineering information and diagrams on site selection, construction, and seeding of dam and spillway.

Keefe, Jim. MULTIFLORA-ROSE FENCING - THE FARMER'S VIEW. Missouri Wildlife 14(2): 13-14, illus. April 1952.

Experience of a Missouri farmer who has 1.3 miles of rose fence. The plants have to be taken care of for a year and a half, but then can take care of themselves. They are hard to grow in really wet spots, and weeding and cultivating come right at crop time. Spreading is not much of a problem for the plants are easily mowed down. Wire fences require a lot of money, work, and maintenance; rose fences are relatively cheap, and require little care once established. "...for fencing contours or most any other use, I guess multiflora rose is the best buy there is on the market today."

Meehean, O. Lloyd and others. SYMPOSIUM ON FARM FISH PONDS AND MANAGEMENT. Journal of Wildlife Management 16(3): 233-288. July 1952.

Titles of individual papers are: Problems of farm fish pond management; Farm and ranch ponds; Farm pond investigations in Alabama; Pond management in Illinois; Management of Indiana ponds for fishing; Farm fish pond research in Iowa; Kentucky's farm fish pond program; Farm pond management in Michigan; Summary of selected pond studies in Missouri; Ranch fish ponds in Montana; Some results of farm pond management studies in New York; Pond fish studies in Saskatchewan.

Mosby, Henry S. WEED CONTROL FOR BETTER FISHING IN FARM PONDS. Virginia Wildlife 13(8): 8-10, illus. Aug. 1952.

Vinson, Carlos. HUNTERS AND FARMERS. Farm Quarterly 7(3): 52-55, 104-105, illus. Fall 1952.

An excellent, practical article on hunter-farmer relationships, with several good suggestions. It gives vivid examples of what farmers have to put up with, but it also tells of several successful cooperative arrangements used in different states. Some state game departments are pushing such plans and others will wish to do so, for these schemes are the key to getting both habitat improvement and hunters on lands not managed for wildlife and closed to hunters. The plans vary widely, but their common ground is that farmers must receive protection and some form of compensation. There can be little doubt that the future of hunting in much of the U. S. is foreshadowed in this paper.

WILDLIFE--MANAGEMENT--FARM--Continued

Wunz, Gerald A. A STUDY OF THE ECONOMIC RELATIONSHIP OF FENCEROWS WITH PARTICULAR REFERENCE TO INVERTEBRATE CROP PESTS. M. S. thesis, Pennsylvania State College, Jan. 1952.

WILDLIFE--MANAGEMENT--FOREST AND RANGE

Barker, Elliott S. LEGISLATION PROPOSED BY THE NATIONAL LIVESTOCK ASSOCIATION FOR GRAZING ON PUBLIC LANDS. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 65-69 p.

Biswell, H. H., R. D. Taber, D. W. Hedrick, and A. M. Schultz. MANAGEMENT OF CHAMISE BRUSHLANDS FOR GAME IN THE NORTH COAST REGION OF CALIFORNIA. California Fish and Game 38(4): 453-484, illus. Oct. 1952.
Report of studies and experiments over 4 years. The mixed brush types discussed are dense and grow on rough, hilly lands. In the dry season they are highly inflammable and extensive wildfires are common in old stands. The areas are chiefly used for watersheds and game. Openings seeded to grass prove highly beneficial to growth and reproduction of deer and also favor small game except brush rabbits. They also retard erosion and improve watershed conditions. Good openings can be created most easily by fire, instructions for the use of which are given, but in some sites bulldozing and discing are practical. Useful grasses are listed and seeding directions are given. Size and number of openings must be governed by various factors, including number of deer in vicinity, for sprout growth must be kept browsed at the proper level. As deer or other browsers increase, openings may be multiplied. At least 30% of an area should be left in brush for game cover.

Clawson, Marion. THE WESTERN RANGE LIVESTOCK INDUSTRY. McGraw-Hill, N. Y. xiv + 401 p., illus. 1950. $5.00. [From review by T. C. Byerly, Quarterly Review of Biology 27(1).]
"...considers the biological and economic problems involved in the production of beef cattle and sheep from grasses, weeds, and shrubs on native range. ...Data for the past 10 years, a period of unusual interest and rapid change, are treated separately."

Cooper, Forrest E. THE CASE FOR A UNIFORM FEDERAL RANGE CODE. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 70-78 p.

Doll, A. D. MILLION-ACRE "GAME FARM." Wisconsin Conservation Bulletin 17(9): 11-14, illus. Sept. 1952.
Tells of the measures being taken to increase game on state and national forests in Wisconsin. A variety of practices are being used to aid deer, sharptail grouse, and herons. A waterfowl program is planned. The whole program is the result of cooperation between the State Conservation Department and the U. S. Forest Service.

Fox, Morley. REPORT ON SPORTSMEN-STOCKMEN RELATIONS IN ARIZONA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 60-62 p.

Love, R. M. and B. J. Jones. IMPROVING CALIFORNIA BRUSH RANGES. Revised. California Agricultural Experiment Station, Berkeley, Circular no. 371. 38 p., illus. 1952. [From Journal of Forestry 50(8).]

Stanton, Frank W. WATER DEVELOPMENT AS AN AID TO GAME DISTRIBUTION. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 184-189 p.

WILDLIFE--MANAGEMENT--FOREST AND RANGE--Continued

Swift, Lloyd W. PROGRAMS FOR FISH AND GAME ON NATIONAL FOREST LANDS. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 44-49 p.

Uhlig, Hans G., and H. Lee Wilson. A METHOD OF EVALUATING AN ANNUAL MAST INDEX. Journal of Wildlife Management 16(3): 338-343, illus. July 1952.
Tells how reports on mast production in West Virginia are compiled. Correlation between mast crop, turkey kill, and minimum May temperatures is discussed and shown by graphs.

WILDLIFE--MANAGEMENT--WET-LAND

Leonard, Ross. WILDLIFE ASPECTS OF THE PRESIDENT'S WATER RESOURCES POLICY COMMISSION REPORT. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 79-83 p.

MacNamara, L. G. NEEDS FOR ADDITIONAL RESEARCH ON MOSQUITO CONTROL FROM THE STANDPOINT OF FISH AND GAME MANAGEMENT. Presented at Annual Meeting of New Jersey Mosquito Extermination Commission. 1-11 p. 1952.
Tells of work of New Jersey Division of Fish and Game in controlling water levels of coastal marshes. Warm season draw-down and cold season flooding create good feeding conditions for muskrats and waterfowl but do not favor mosquito breeding. Muskrats and waterfowl have increased greatly in areas so handled. In one area of mosquito breeding, shallow pools were deepened with dynamite. Next year mosquito breeding was not reported and the deepened pools were producing widgeon grass and being used by black ducks. Other water control measures that favor wildlife and hinder mosquito breeding should be investigated further and used where possible. Insecticides and herbicides should be tested carefully and used so as to give the least kill of desirable species.

Mulrennan, John A. and V. Samuel Minnich. FUTURE OUTLOOK OF MOSQUITO CONTROL IN FLORIDA. Mosquito News 12(2): 60-61. June 1952.
This and other articles in the same issue indicate clearly that mosquito control experts are coming to the opinion that chemical controls are only a partial answer, and that wholesale drainage and other engineering approaches are the only lasting solution. Intensified and expanded drainage efforts are under way, especially in coastal marshes. The entire coastal area of Florida is covered by mosquito control districts except for 2 counties. [Great tracts of coastal marsh also are being drained in New Jersey and elsewhere. It is difficult to avoid the conviction that natural areas and certain other wildlife lands can be protected only by acquisition and vigorous guardianship. Never before in the U. S. have "undeveloped" lands been attacked by so many interests. Mosquito control, agricultural expansion, industrialization, resort development, and suburbanization are proceeding at a rate that would have been incredible 20 years ago.]

National Resources Planning Board. MANUAL ON PLANNING OF SMALL WATER PROJECTS, OUTLINING CONSIDERATIONS THAT SHOULD BE INCLUDED IN PLANNING SMALL PROJECTS FOR WATER SUPPLY, SEWAGE DISPOSAL AND SANITATION, FLOOD PROTECTION, IRRIGATION DEVELOPMENT, LAND DRAINAGE, HYDROELECTRIC POWER, RECREATION AND WILDLIFE, AND CONSERVATION AND WATER FLOW RETARDATION. 82nd Congress, House Document 408. xii + 191 p. 1952. Obtainable from issuing office or House Document Room. [From Monthly Catalog of U. S. Government Publications, June 1952.]

WILDLIFE--MANAGEMENT--PREDATION AND CONTROL

Calaby, J. H. NOTES ON THE LITTLE EAGLE: WITH PARTICULAR REFERENCE TO RABBIT PREDATION. Emu 51: 33-56, illus. July 1951.
Study of predation and bird behavior, Australia. The total number of young rabbits estimated to have been killed by an average of six little eagles in a 71 day period was 260. This represented a 4% removal of young rabbits and a 2.5% removal of all rabbits. The birds continued to hunt in the same area after the rabbit population was reduced 80% by artificial control. Conditions favored predators and several kinds were present. The effect of all predation is not estimated, but apparently it was inadequate to keep rabbits within reasonable limits.

Howard, Walter E. CONCERNING OUR PREDATORS. California Farmer 196(4): 184-185. Feb. 23, 1952.
Gives facts and figures showing that coyotes do not control ground squirrels in California and that both must be artificially controlled in the interest of agriculture. "In summary, it has been pointed out that coyotes cannot hold the density of squirrels at so low a level that they will not compete seriously with man's interests. Also, the ground squirrel, as an agricultural pest, is not the result of coyote control measures that have been practiced in California. Grazing by livestock, on the other hand, even when light or moderate, may indirectly result in an increase in the abundance of squirrels..." At the San Joaquin Experimental Range, grazing is necessary to maintain a desirable type of forage.

Kirkpatrick, Charles M. PREDATOR-PROOFING POULTRY. Outdoor Indiana 19(9): 4-5, graph. Sept. 1952.
Report of experiments on sizes of holes through which opossum, raccoon, weasel, mink, skunk, red fox, and gray fox can pass. Weights of individuals tested are considered. The old idea that size of head determines size of hole through which an animal can crawl proved untrue; animals were stopped by width of shoulders or hips. To protect poultry, ½-inch mesh is recommended if weasels or minks are present, but for the larger mammals 1½ or 16-gauge wire fabric of 1 x 2-inch mesh is more than adequate. The 2 types must be combined for complete protection.

Lacy, James, and others. SAFEGUARD YOUR LIVESTOCK FROM BEARS, WOLVES, COYOTES, KILLER DOGS. University of Wisconsin Extension Service (Wisconsin Conservation Department cooperating), Circular 411. 8 p. April 1952.
Recommends: high fences topped with charged wire; predator-proof shed for night use; keeping cows or goats with sheep to fight off predators; use of good sheep dog; licensing of dogs and destruction of strays; disposal of carcasses or trimmings that might lure carnivores; belling sheep; notifying Conservation Department as soon as predation occurs, so that immediate action can be taken. The state has trappers and bear dogs. Bear can be hunted during deer season and there is no bag limit. Bear may be trapped throughout the year in 23 counties. Landowners or lessees may hunt or trap bear at any time on their lands. Laws pertaining to damage from predators or deer are quoted.

Latham, Roger M. THE PREDATOR QUESTION. Pennsylvania Game News, Special Issue no. 5: 1-96, illus. Sept. 1952.
Reprinted, with only recommendations and references removed, from "The ecology and economics of predator management," (Final Report PR Project 36-R, Report II. 1951) abstracted at length in WR 66, p. 3.

Young, Stanley P. THE BOUNTY SYSTEM. Atlantic Naturalist 8(1): 10-17, illus. Sept.-Oct. 1952.
Facts and figures on the cost, fraud, and futility of bounty systems.

WILDLIFE--REPORTS OF ORGANIZATIONS

Dambach, Charles A. OHIO DIVISION OF WILDLIFE, ANNUAL REPORT, FISCAL YEAR 1950. Ohio Department of Natural Resources. 1-48 p., illus. 1951.
The report of the game management section contains good summaries of: work on many specific areas; habitat improvement programs of regional or statewide nature; work of 4 game farms (mostly for pheasant propagation, one for raccoons); and quail restoration. There are also brief accounts of research projects: wildlife of Resthaven Sanctuary; use of wood duck boxes in farm ponds; pheasant renesting; fall game survey; evaluation of pheasant refuges; deer survey. "Habitat development, both temporary and semi-permanent, has been augmented by stepped-up production of ring-necked pheasants at two State game farms, rapid expansion of the pheasant refuge system, intensified winter feeding, the purchase of unmolested nesting cover and other expedients."

International Union for the Protection of Nature. PROCEEDINGS AND REPORTS OF THE SECOND SESSION OF THE GENERAL ASSEMBLY HELD IN BRUSSELS, 18-23 OCTOBER 1950. International Union for the Protection of Nature, 42, rue Montoyer, Brussels. 1-82 p. 1951. $1.00.
Devoted largely to discussions of organization, finances, desirable activities, plans for the future, and difficulties encountered.

International Union for the Protection of Nature. THE POSITION OF NATURE PROTECTION THROUGHOUT THE WORLD IN 1950. International Union for the Protection of Nature, 42, rue Montoyer, Brussels. vii + 538 p., map. 1951. $4.25.
Most nations and dependencies here summarize their activities and achievements in conservation. The accounts generally follow the same outline, major headings of which are: General (brief statement of situation), Soils, Water, Flora, Fauna, Minerals, Reserves (reservations), Monuments (natural), Organizations, Education, Conventions (international agreements). The volume permits one to ascertain rather accurately the position of conservation in nearly any part of the world. In some areas, including certain U. S. dependencies, conservation is virtually unknown, but in a surprisingly large number of areas it receives lively attention. Reports are in French or English. The table of contents is at the back.

McGowin, Earl M. DEPARTMENT OF CONSERVATION, STATE OF ALABAMA, REPORT FOR FISCAL YEAR OCTOBER 1, 1950 - SEPTEMBER 30, 1951. 1-147 p., illus. 1952.
The report of the Division of Game and Fish (p. 83-117) includes considerable information on status of game and furbearer species in the state, and lists of research projects. Doves were low because of a bad winter and trichomoniasis epidemics in 2 consecutive years. Squirrels were at an all-time low because of changed land use practices and their future in the state is not bright. Other important forms of wildlife were holding their own or increasing.

Morgan, H. R. NORTH DAKOTA GAME AND FISH DEPARTMENT ANNUAL REPORT. July 1, 1950 to June 30, 1951. 1-53 p., illus. 1951.
Includes: statistics on beaver control; numbers of 11 fur-bearers legally pelted 1943-51; status of various game and fur animals in state.

New Jersey Division of Fish and Game. ANNUAL REPORT FOR THE FISCAL YEAR JULY 1, 1950 - JUNE 30, 1951. 1-52 p. 1952?
Includes brief reports on: numbers of pheasants and quail reared and stocked; importation of 22,626 rabbits; wildlife food and cover plantings made; waterfowl, upland game bird, and deer research projects; deer management, harvest, and control; and "Predatory vermin control."

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Washburn, Mel, editor and compiler. LOUISIANA DEPARTMENT OF WILD LIFE AND FISHERIES, FOURTH BIENNIAL REPORT, 1950-1951. iv + 482 p., illus. 1952.

This voluminous report contains a great deal of information on the status of wildlife forms in the state, and on the policies and activities of the Department. The section on fur animals gives catch statistics for 9 species, discusses muskrat, nutria, and raccoon, and goes into detail about processing nutria skins. Muskrats are low; nutria are thriving and being transplanted; marsh raccoons are outlawed. Refuges of the state are briefly characterized. The report of the Division of Fish and Game takes up restocking of quail, turkey, deer, squirrel, and fish. The lengthy Federal Aid report (p. 222-330) gives much information on surveys and management studies, doves, waterfowl, deer and turkey restocking, past and present habitat conditions and game populations in state. The long and diversified report of the Chief Biologist contains, among many other things, popular accounts of raccoon, deer, rabbit, and bobcat, the folly of introducing pheasants to the state, the fraud of frog farming, and the economics of turtles. Tables by George Lowery, Jr. show the seasonal distribution of all birds of Louisiana. A most welcome addition to this huge biennial report would have been an index.

MAMMALS--GENERAL

Laws, R. M. A NEW METHOD OF AGE DETERMINATION FOR MAMMALS. Nature 169 (4310): 972-973, illus. June 7, 1952.

By studying sections of canine teeth. The technique and reasons for its validity are described. "While working on the elephant seal (Mirounga leonina) in 1949, a new and accurate method of determining age, depending upon cyclical variation in the rate and manner of calcification of the teeth, was developed. This makes possible determination of age, to within a month, up to at least twenty years in the male, and thirteen years in the female." The technique seems to work for several other marine mammals, "and a superficial examination of material in museums indicates that the teeth of a number of other vertebrates, living and fossil, have internal rings or external ridges which, like those found in seals, may possibly be used for determing age. A detailed paper has been prepared and will appear shortly in the Falkland Islands Dependencies Survey Scientific Publications."

Maia, Luiz Carlos de Mesquita. THE SURVIVAL OF BRAZILIAN MAMMALS. Journal of Mammalogy 33(3): 389-340. Aug. 1952.

Brazil has game laws and 3 national parks, but enforcement and protection are virtually lacking. "Consequently even in the most uncivilized regions of Brazil, the animal population decreases frightfully." The few kinds of large mammals are rapidly being killed off over great parts of the country and their extinction is feared.

MAMMALS--FAUNAS AND MANUALS

Burt, William Henry and Richard Philip Grossenheider. A FIELD GUIDE TO THE MAMMALS, GIVING FIELD MARKS OF ALL SPECIES FOUND NORTH OF THE MEXICAN BOUNDARY. Houghton Mifflin, Boston. xxiii + 200 p., illus. 1952. $3.75.

Fine illustrations, mostly in color, and good range maps for all non-marine species make this a book many naturalists will want. Other features are sketches of tracks, tables of dental formulae, and photographs of skulls representing 91 genera. The text treats species and higher groups, necessarily omitting subspecies. Identification is made through study of pictures, range maps, habitat statements, and the comparative notes provided for most species. This system works nicely for well-marked forms in which sexual, age, and geographic variation do not complicate matters. The beginner will be delighted at the ease with which he can distinguish, for example, nutria from muskrat or beaver. But he will soon find that many identifications are not easy and that some cannot be made with this book, as the authors occasionally point out. A few difficult forms, including big brown bears and spotted skunks, are treated only to group. Readers attempting to identify species of several large genera will find external

MAMMALS--FAUNAS AND MANUALS--Continued

characters inadequate and determinations frequently uncertain. Indeed, beginners may confuse some of the genera. Naturalists wishing help with identification of troublesome species will find that this book stops about where they want it to begin. This is not the fault of the authors. Their purpose was to produce an accurate popular guide based on external characters, and no doubt they have succeeded insofar as the characters and variations of the animals permit. Identification of mammals to species simply is often too technical for a field guide. Perhaps it would be better, in dealing popularly with the more difficult mammalian groups, to treat only genera and any readily recognized species, and to put more emphasis on technical identification of genera. The present work is highly attractive, and if employed with recognition of its inherent limitations it is useful. But certainly the publishers should not claim that "This book enables the user to identify quickly and easily any mammals that he might encounter..." Even mammalogists cannot do that.

Cockrum, E. Lendell. MAMMALS OF KANSAS. University of Kansas Publications, Museum of Natural History, 7(1): 1-303, maps and graphs. Aug. 1952.
This useful monograph has keys for each group down to and including species, and range maps and locality lists for each form. Measurements of a few individuals of each form are presented, and some subspecies are compared. More information on the identification of subspecies would have been welcome. Discussions of individual species include such topics as history in state, present status, numbers bountied, number of pelts sold in state, foods, reproduction, and other habits, with emphasis on observations in Kansas. Interesting figures are given on coyote population fluctuations. Introductory sections describe the state and discuss problems of distribution and speciation. Faunal divisions of the state are discussed at length, with comparisons of life zone, biome, biotic area, and distributional area approaches. Mammals that have become extinct in Kansas in the last 100 years are: wolf, red wolf, swift fox, grizzly bear, black bear, black-footed ferret, otter, puma, elk, pronghorn, and bison.

Durrant, Stephen D. MAMMALS OF UTAH. TAXONOMY AND DISTRIBUTION. University of Kansas Publications, Museum of Natural History, 6: 1-549, maps. Aug. 1952.
In completing this volume Dr. Durrant has accomplished a tremendous task, the magnitude of which can scarcely be believed by those who have not attempted related work. Eighteen years were spent in preparation of this study of the 247 mammalian species and subspecies known from Utah. As the subtitle indicates, the treatment is almost entirely taxonomic, consisting of keys, range maps, descriptions, comparisons, tables of measurements, discussions of distribution and relationships, and lists of localities. But for the larger predators and game animals, figures are given on numbers trapped, bountied, or harvested in recent decades. Histories of the big game species in Utah are briefly told. The volume closes with long sections on faunal areas of Utah as shown by mammals, and the effect of physiography and physiographic changes on the distribution and evolution of mammals.

Goodpaster, Woodrow W. and Donald F. Hoffmeister. NOTES ON THE MAMMALS OF WESTERN TENNESSEE. Journal of Mammalogy 33(3): 362-371. Aug. 1952.
Annotated list.

Myers, Lawrence H. SMALL MAMMALS FOUND TO BE PRESENT IN THE BARRENS GROUSE STUDY AREA, CENTRE COUNTY, PENNSYLVANIA. M. S. thesis, Pennsylvania State College, Jan. 1952.

Schwartz, Albert. THE LAND MAMMALS OF SOUTHERN FLORIDA AND THE UPPER FLORIDA KEYS. Ph. D. thesis, University of Michigan, 1952. 189 p. [From long abstract in Dissertation Abstracts 12(4).]
This contribution is primarily an analysis of distribution and factors determining it, but, "The main body of the study deals with detailed discussions of those mammals present in the area. In each case, data are given on distribution, relative abundance, habitat, reproduction, color and variation, predation, and parasitism. Cranial and external measurements and locality records are given.

MAMMALS--FAUNAS AND MANUALS--Continued

Forty forms are discussed, of which five have previously been described as new as a result of this study. A table correlates the distribution of these forms and their abundance with the habitats mentioned previously in the paper. A list of the mammals and their parasites is also made."

Soper, J. Dewey. THE MAMMALS OF PRINCE ALBERT NATIONAL PARK, SASKATCHEWAN, CANADA. Canadian Wildlife Service, Wildlife Management Bulletin Series 1, no. 5: 1-48, illus. June 1952.

Description of this park of 1,496 square miles in Central Saskatchewan, and annotated list of mammals. The flora is a mixture of prairie, aspen, coniferous, and muskeg types, and the mammalian fauna is correspondingly varied, with 43 forms reported. Annotations treat measurements, relative abundance, habitat, history in region, and cyclic fluctuations.

Rodeck, Hugo G. GUIDE TO THE MAMMALS OF COLORADO. University of Colorado Museum Leaflet no. 10: 1-72, illus. Sept. 1952. 75¢.

A simple guide for the layman. Sketches, popular keys, and brief descriptions help the beginner identify living mammals. The species of larger mammals are treated, but only the genera or subgenera of small mammals. A few interesting facts are given for each species or group, and there are often remarks on present status in the state.

MAMMALS--COMMUNITIES, NUMBERS, HOME RANGES

Turček, František J. A CONTRIBUTION TO THE ECOLOGY OF SOME SMALL MAMMALS IN SLOVAKIA (Príspevok k ekologii niektorých drobných savcov na Slovensku). Věstník Čs. Zoologické Společnosti 15: 515-553, illus. 1951. [Cited from reprint.]

English summary of nearly 3 pages. The author treats many aspects of the ecology of Apodemus sylvaticus, A. flavicollis, and Clethrionomys glareolus, including habitat, populations and fluctuations, foods, ecological isolation, competition, reproduction, and comparative measurements. Of particular interest to American workers are Turček's remarks on "ecology of survival." He has found, as have some other students, that during population lows the few survivors are not in habitats where highest populations previously occurred, but in relatively unfavorable habitats. From these survival habitats the species can reoccupy more optimal habitats when the upswing occurs. [Similar opinions have been expressed by F. C. Evans (1942. J. An. Ecol. 11: 182-197) and J. P. Linduska (1950. Ecology and Land Use Relationships of Small Mammals on a Michigan Farm, p. 96).]

MAMMALS--SHREWS, MOLES, BATS

Gaughran, George Richard Lawrence. A COMPARATIVE STUDY OF THE OSTEOLOGY AND MYOLOGY OF THE CRANIAL AND CERVICAL REGIONS OF BLARINA BREVICAUDA KIRTLANDI AND SCALOPUS AQUATICUS MACHRINUS. Ph. D thesis, University of Michigan, 1952. 191 p. [From abstract in Dissertation Abstracts 12(4).]

Pearson, Oliver P., Mary R. Koford, and Anita K. Pearson. REPRODUCTION OF THE LUMP-NOSED BAT (CORYNORHINUS RAFINESQUEI) IN CALIFORNIA. Journal of Mammalogy 33(3): 273-320, illus. Aug. 1952.

Reproductive biology is treated in detail and there are sections on general habits, population density, and limitations on numbers.

Pruitt, William Obadiah, Jr. AN ANALYSIS OF SOME PHYSICAL FACTORS AFFECTING THE LOCAL DISTRIBUTION OF THE SHORTTAIL SHREW (BLARINA BREVICAUDA KIRTLANDI) IN NORTHERN LOWER MICHIGAN. Ph. D. thesis, University of Michigan 1952. 133 p. [From abstract in Dissertation Abstracts 12(4).]

Abundance in different habitats is correlated with soil conditions as determined with the aid of Thermistors and Bouyoucos plaster blocks. Abundance in different habitats is contrasted with that of other small mammals. "...it is postulated that in this region Blarina has a major center of population in the

MAMMALS—SHREWS, MOLES, BATS—Continued

hardwoods areas (loams), with a minor center in coniferous swamps and bogs (peats, mucks, or wet sands), and is present in the dry sandy uplands only to the extent that winter freezing and excessive summer heat and dryness of the soil allow it. As succession proceeds and changes in the soil and humus environment occur, Blarina keeps pace by invading the newly accessible areas."

Silver, James and John C. Jones. CONTROL OF BATS. U. S. Fish and Wildlife Service, Wildlife Leaflet 333. 1-4 p. Jan. 1951.
Bats, though harmless, are often objectionable in buildings. They can be repelled by naphthalene or paradichlorobenzine, but it is better to bat-proof the building. Directions for both are given. As a last resort, fumigation with cyanide may be used, but this operation must be left to professionals. Fumigation has the additional disadvantages of being only a temporary cure, and of leaving decaying bodies in the building.

Webb, Olin L. and J. Knox Jones, Jr. AN ANNOTATED CHECKLIST OF NEBRASKAN BATS. University of Kansas Publications, Museum of Natural History, 5(21): 269-279. May 1952.

MAMMALS—RABBITS AND PIKAS

Bruna, Joe. THE PRIVATE LIFE OF MR. AND MRS. COTTONTAIL. Kentucky Happy Hunting Ground 8(2): 30-31. March 1952.
A popular summary of the results of the author's life history and management studies of cottontails in Kentucky. A detailed, mimeographed report on these studies has been prepared (see WR 67, p. 14).

Elchlepp, J. G. THE UROGENITAL ORGANS OF THE COTTONTAIL RABBIT (SYLVILAGUS FLORIDANUS). Journal of Morphology 91(1): 169-198, illus. July 1952.
Anatomy and embryology of these organs and their accessory structures. References to papers on changes during reproductive cycle of adult.

Lahermaa, G. THE LUNG-WORM DISEASE OF THE HARE (Jäniksen keuhkomatotaudista). Suomen Riista 7: 93-119, illus. 1952.
In Finnish. Author's entire English summary: "The article is a review of the author's more detailed paper on the same subject published in Papers on Game Research, Vol. 6 (1951)."

Lemke, Charles W. HOW CAN WE PRODUCE MORE COTTONTAILS? Wisconsin Conservation Bulletin 17(7): 22-25. July 1952.
Rabbits are becoming scarcer in Wisconsin and the usual panaceas are being proposed. The author cites results in other states showing that importation or breeding for restocking give poor results and are out of the question financially. Examples of great success with habitat improvement are given, and some ways to proceed along this line are mentioned.

Longwell, Jake. THE COTTONTAIL IN MARYLAND. Maryland Conservationist 29(3): 4-8, illus. Fall 1952.
Brief review of habits; poor results and high costs of importing rabbits as found by other states; disease danger in importations; value of habitat improvement. Circularization of all states east of the Mississippi River revealed that only 5 are still stocking rabbits and 18 are not. In 17 of the states individuals or groups may stock rabbits; in 6 they may not. Five states reported disease imported with rabbits; 18 had no proof that this had occurred but some suspected it had. Recommended management for Maryland: habitat improvement, with emphasis on proper interspersion of food and cover within individual ranges; local transplanting to improved areas; brush and rock piles near sources of food, especially winter food, which is often limiting.

McDowell, Robert D. THE SURVIVAL OF NATIVE TRAPPED RABBITS RELEASED ON AGRICULTURAL LANDS. M. S. thesis, Pennsylvania State College, June 1952.

MAMMALS--RABBITS AND PIKAS--Continued

Myers, Robert H. NEW GAME ANIMAL FOR KENTUCKY HAS BEEN PLANTED. Kentucky Happy Hunting Ground 8(4): 16,30, illus. July 1952.
The state is stocking Great Plains jackrabbits (Lepus californicus melanotis) in areas of large open fields. These hares can be pests, but, "with hunting to keep them in check in Kentucky, their numbers are not expected to get out of hand." A total of 95 jackrabbits has been planted at 3 different places.

Ratcliffe, F. N., K. Myers, B. V. Fennessy, and J. H. Calaby. MYXOMATOSIS IN AUSTRALIA, A STEP TOWARDS THE BIOLOGICAL CONTROL OF THE RABBIT. Nature 170(4314): 7-11, map. July 5, 1952.
A detailed summary of the 1950-52 epidemics of this introduced disease. Insect vectors, especially several kinds of mosquitos, spread the virus over a large part of the continent and tens of millions of rabbits were killed. Results varied greatly from place to place and were best where and when there were good areas for mosquito breeding. The disease is well established in the wild and is expected to persist. Tests have shown that all common domestic animals and representatives of the native animals are refractory to the disease, as is the European hare. In view of the general interest in the possibility of predators culling out sick or inferior individuals of a prey species, one statement is especially significant. Early experiments with a flea vector "revealed the interesting fact that foxes, presumably by selective predation on lethargic infected rabbits, could prevent the establishment and spread of the disease."

Sheffer, Dale E. COTTONTAIL POPULATION AND MORTALITY STUDY IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, Aug. 1952.

MAMMALS--RODENTS--GENERAL

Chitty, D. MORTALITY AMONG VOLES (MICROTUS AGRESTIS) AT LAKE VYRNWY, MONTGOMERYSHIRE IN 1936-9. Philosophical Transactions of the Royal Society of London Series B, no. 638, vol. 236: 505-552, illus. July 1952.
An important paper on causation of cycles. It also contains significant sections on estimation of home ranges, populations, and survival. "During the time of their almost complete disappearence in 1938 to 1939 voles were not subjected to any known environmental conditions likely to have caused excessive mortality. The hypothesis is therefore advanced that death was primarily due to adverse conditions to which the parents were subjected in the previous breeding season. It is inferred (a) that the high juvenile mortality at that time was a symptom of severe intraspecific strife, (b) that intraspecific strife had deleterious effects, probably upon the hormone balance of the females, so that (c) their young suffered defects which reduced the longevity of those which survived the breeding season, and also (d) impaired their ability to produce a normal generation." Thus the condition of one generation affects breeding of the next 2 generations. The basis of this system, competition for space, is believed to interact with the effects of weather to produce regional synchrony of cycles. Extension of this theory to the snowshoe hare and other animals is discussed with consideration of the difficulties involved.

Dice, Lee R. and Elizabeth Barto. ABILITY OF MICE OF THE GENUS PEROMYSCUS TO HEAR ULTRASONIC SOUNDS. Science 116(3005): 110-111. Aug. 1, 1952.

Howard, Walter E. THE PESKY POCKET GOPHER. Spreckels Sugar Beet Bulletin 16(3): 21-22, illus. May-June 1952.
General review of habits and severe judgment on damage caused in California. No good is attributed to the gopher. It is considered the most destructive rodent in the state now that ground squirrels are effectively reduced. Present control methods for gophers are not entirely adequate. Desired is a bait that will remain toxic and acceptable long after being placed in a burrow, so that any gopher that comes along will be killed.

MAMMALS--RODENTS--GENERAL--Continued

Kelson, Keith R. COMMENTS ON THE TAXONOMY AND GEOGRAPHIC DISTRIBUTION OF SOME NORTH AMERICAN WOODRATS (GENUS NEOTOMA). University of Kansas Publications, Museum of Natural History, 5(16): 233-242. April 1952.

Quay, Wilbur Brooks. THE SKIN GLANDS OF VOLES AND LEMMINGS (MICROTINAE). Ph. D. thesis, University of Michigan, 1952. 153 p. [From long abstract in Dissertation Abstracts 12(4).]

"The essential features of the glands which are included in this study are their: (1) morphology; (2) histochemistry; (3) topographical distribution in different species; (4) enlargement in particular cutaneous areas in certain genera and species; (5) correlations of size with age, sex, and breeding season; (6) taxonomic and evolutionary significance."

MAMMALS--HOUSE RATS AND MICE

Anonymous. THE LATEST ON MOUSE CONTROL. Pest Control 20(8): 30. Aug. 1952.

Summary of opinions on control of house mice. Baits, poisons, tracking powders, and repellents are discussed. Favored poisons are Warfarin and thallium sulfate. 1080 is thought to have lost its effectiveness against mice; some operators blame this reaction on the addition of a dye now required by law.

Davis, David E. A PERSPECTIVE ON RAT CONTROL. Public Health Reports 67(9): 888-893, graphs. Sept. 1952.

The author discusses the various factors that affect populations, especially those of rats. He shows that poisoning campaigns, though costly, have but temporary results. The most effective and lasting form of control is habitat alteration (sanitation) that is unfavorable to rats and improves human living conditions. The cost of such improvements need not all be ascribed to rat control, for they benefit the residents in many ways.

Giban, J. ESSAIS D'EFFICACITÉ D'APPATS AU WARFARINE POUR LA DESTRUCTION DU SURMULOT. Phytiatrie-phytopharmacie 1952(1): 13-16, graphs. 1952. [Cited from reprint.]

Warfarin baits (Warfarin 1/4,000) tested on 2 French farms gave 90% to 95% kill of Rattus norvegicus as indicated by decline in bait consumption. This is a better kill than obtained in previous tests with zinc phosphide or Antu.

Hansens, Elton J. and John Hadjinicolaou. PRELIMINARY STUDIES OF FLEAS ON RATS (RATTUS NORVEGICUS) IN NEW JERSEY. Journal of the New York Entomological Society 60(2): 91-95. June 1952.

Incidence and seasonal distribution of fleas from 1390 rats taken at dumps, in buildings, hatcheries, and other places.

Harrison, J. L. MOONLIGHT AND THE PREGNANCY OF MALAYAN FOREST RATS. Nature 170(4315): 73-74. July 12, 1952.

Evidence from time of pregnancy in samples of several kinds of Rattus "that in the nocturnal rats the onset of the period of bright moonlight near the time of full moon has some stimulating effect on conception." Study of diurnal squirrels from the same area revealed no such correlation.

Knutson, Herbert, and Raymond T. Szymkowicz. ECTOPARASITISM OF NORWAY RATS IN AN INLAND NEW ENGLAND VILLAGE AND IN A NEW ENGLAND SEAPORT. Journal of Economic Entomology 45(2): 338-339. April 1952.

The ectoparasitism of rats collected at Kingston, Rhode Island is compared in a limited way with that found in a similar previous study at Providence, R. I.--R. T. Mitchell.

MAMMALS--HOUSE RATS AND MICE--Continued

Leslie, P. H., Ursula M. Venables, and L. S. V. Venables. THE FERTILITY AND POPULATION STRUCTURE OF THE BROWN RAT (RATTUS NORVEGICUS) IN CORN-RICKS AND SOME OTHER HABITATS. Proceedings of the Zoological Society of London 122(1): 187-238. May 1952.

A detailed statistical analysis of many topics, all of which bear on reproduction in relation to populations and population composition. In part, the theoretical rate of increase is compared with that actually found at different times; and data on reproduction are related to those on populations through life tables and infant mortality. Some of the less specialized conclusions are that rats in ricks breed more during the winter than do rats not in ricks; that such a difference cannot be established at the peak breeding season (April); and that rats in ricks sometimes approach the maximum possible rate of increase.

MAMMALS--SCIURIDS

Flyger, Vagn F. A STUDY OF THE NEST BOX HABITS AND THE BREEDING SEASON OF THE GRAY SQUIRREL (SCIURUS CAROLINENSIS LEUCOTIS) IN MARYLAND AND PENNSYLVANIA. M. S. thesis, Pennsylvania State College, Jan. 1952.

Musacchia, Xavier J. and Charles G. Wilber. STUDIES ON THE BIOCHEMISTRY OF THE ARCTIC GROUND SQUIRREL. Journal of Mammalogy 33(3): 356-362. Aug. 1952.
Chemical changes during fasting and hibernation.

MAMMALS--BEAVER

Grasse, James E. LIVE-TRAPPING AS A MEANS OF NUISANCE-BEAVER CONTROL. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 170-174 p.

Hargrave, Charles. BEAVER PROBLEMS. North Dakota Outdoors 15(2): 4-5, illus. Aug. 1952.
Beaver have become numerous in North Dakota and are doing damage in many places. Large numbers are taken on damage permits. The State Game and Fish Commission is free to control them, but does not find it economical to do so at present low pelt prices. Too few trappers are interested. Legislative action is necessary to change the method of harvest.

Johnson, Frank M. [1952 BEAVER SURVEY, WEST VIRGINIA.] West Virginia Conservation 16(4): 36-37. July 1952.
Numbers, results of 1952 open season (784 beavers taken), value of catch, rate of reproduction, stream gradients suitable for beaver. Minimum number in state is thought to be 3,119, 45% more than in 1947. Decreases appeared in 3 counties. Annual reproduction is about 40%. Losses from predation, poaching, and crippling total about 10%. Practically all beaver range in the state is occupied and the population has been stable for the past 3 years.

McNichol, Hamilton L. BEAVER ARE EASY TO RAISE. Sports Afield 128(3): 113, illus. Sept. 1952.
Tips on rearing beaver in captivity.

Perry, Clay. BEAVER COMEBACK IN NEW ENGLAND. Beaver, A Magazine of the North 283: 32-35, illus. June 1952.
Popular account of beaver restoration and management in the Northeast.

Phares, John H. MISSISSIPPI BEAVER HARVEST. Mississippi Game and Fish 16(12): 3, graph. Aug. 1952.
Number taken and pelt prices, 1946-52. Peak of average pelt price ($13) was in 1947, with almost steady decline afterward to $6.11. Number taken rose from about 60 in 1946-47 to 804 in 1950-51 and declined to 721 in 1951-52. Beavers are caught in 47 of the 82 counties. Three-fourths of them come from the Central Pine-Oak Hills region in the central and southwestern part of the state.

MAMMALS—MUSKRAT AND NUTRIA

Artimo, Atso. HOW TO INCREASE MUSKRAT PRODUCTION (Piisamituoton tehostaminen). Suomen Riista 7: 22-38, illus. 1952.

In Finnish, with English summary. Recommendations for intensive muskrat culture. Certain of the proposals should be applicable to small marshes in this country, insofar as our economic situation justifies them. Certain others seem unnecessary in the light of American experience. Some of the management measures suggested are: Improve food conditions by chemical treatment of water and introduction of new plants. Prepare feeding floats. Control water level. Construct burrows or artificial dens on shore banks on wide, open shores. Protect marsh vegetation from cutting or grazing. Drain lake only if necessary, and then only in summer. Control poaching, dogs, minks, cats, hawks, and owls. Use fox repellent around houses and dens; a good one is 1/3 carbolineum and 2/3 oil. Cease trapping as soon as gravid females appear. Let trapping intensity vary with population level. Establish refuges and change them frequently.

Errington, Paul L. THE MATHEMATICAL MUSKRAT. PART II. Iowa Conservationist 11(7): 51, illus. July 1952.

The muskrat takes part in the 10-year game cycle, although population size may not indicate this because of drought emergencies. Rate of reproduction varies directly with the game cycle, social tension is less during the favorable years for the cyclic species, and disease resistance is higher at these times. The author believes that the game cycle is a biological reality and that it is caused by some unknown depressive factor.

McLeod, J. A. and G. F. Bondar. STUDIES ON THE BIOLOGY OF THE MUSKRAT IN MANITOBA. PART I. OESTROUS CYCLE AND BREEDING SEASON. Canadian Journal of Zoology 30(4): 243-253, graph. Aug. 1952.

Reports careful work with captive animals. From authors' abstract: "The minimum time required for the completion of an oestrous cycle was found to be two days while the maximum time observed was 22 days. On the basis of 136 complete oestrous cycles studied, the modal time was found to be approximately four days and the mean time 6.1 days. The longer cycles found by ourselves in 1950 and by Beer are interpreted as representing pseudo-pregnancies and not oestrous cycles. Failure of muskrats to mate in captivity or in the wild during the latter part of the summer is attributed to sexual inactivity of the males and not the females."

MAMMALS—FURBEARERS—GENERAL

Anonymous. 1951-52 TRAPPING RESULTS. Iowa Conservationist 11(8): 58. Aug. 1952.

Iowa fur catch. Catch per species and average price per pelt.

Baldwin, Paul H., Charles W. Schwartz, and Elizabeth Reeder Schwartz. LIFE HISTORY AND ECONOMIC STATUS OF THE MONGOOSE IN HAWAII. Journal of Mammalogy 33(3): 335-356, illus. Aug. 1952.

A substantial contribution to our knowledge of this controversial exotic. Section headings are: Classification, Habitat in Hawaii, Numbers and Sex Ratio, Description, Distribution in the Hawaiian Islands, General Habits, Reproduction, Foods, Parasites and Enemies, Coactions of the Mongoose in Hawaii and its Economic Status. The authors reach no hard and fast conclusion on economic status. Mongooses kill many destructive rodents and insects. They will eat beneficial toads. They are extremely fond of birds and are a menace to poultry, but catch relatively few wild birds. They may reduce (and rarely extirpate) certain species that are exceptionally vulnerable, but even where mongooses are abundant in Hawaii, ground-nesting game birds persist in good numbers. As with many predators, the mongoose's economic status varies with the observer's interest and with local conditions. Further introductions of this animal, however, are recommended by no authority.

MAMMALS--FURBEARERS--GENERAL--Continued

Gale, Larry. MORE FURS TAKEN, BUT VALUE DOWN LAST SEASON. Kentucky Happy Hunting Ground 8(4): 8, illus. July 1952.
Summary of 1951-52 Kentucky fur harvest as determined from buyers' reports.

Jones, Glenn. FUR REPORT FOR OKLAHOMA. Oklahoma Game and Fish News 8(7-8): 15. July-Aug. 1952.
1951-52 take of various species; average pelt prices.

Twichell, Reed. MISSOURI FURBEARERS. Missouri Conservation Commission. 1-20 p., illus. July 1951.
Brief sketches of the habits of each kind; value of furbearers, including table of Missouri catch and its value, by species, 1940-50; management needs of furbearers; how to learn how to trap; how to make lures; how to care properly for pelts.

MAMMALS--BEARS

Anonymous. THE BLACK BEAR IN PENNSYLVANIA. Pennsylvania Game News 23(4): 11-18, illus. July 1952.
Bears were nearly exterminated in the state, but over a period of years good laws were evolved for their conservation. These have been successful, as kill records (1915-51) demonstrate. Bears are highly prized by hunters. Bear damage is paid for by the state; data on bear damage claims are given (1925-50). Livestock killing is purely an individual trait, and bears that have it may be killed at any time. Where bears became common they were live trapped and transplanted. Habits of bears are summarized. Sketches show how to tell cubs (illegal) from adults (legal) by means of canine tooth characters.

Maine. 1951 BEAR BOUNTIES. Maine Department of Inland Fisheries and Game. 1 p., map. 1952.
Shows numbers of bears bountied in each district of state. Total, 1137.

MAMMALS--MUSTELIDS

Jurgenson, P. B. EKOLOGO-GEOGRAFICHESKIE ASPEKTIA V PITANII LESNOI KUNITSIA I GEOGRAFICHESKIA ISMENCHIVOST EKOLOGO-MORFOLOGICHESKIKH ADAPTATSII EE ZHEVATELNOGO APPARATA. Akad. Nauk SSSR, Moscow, Zool. Zhurnal 30(2): 172-185. 1951. [From Journal of Mammalogy 33(3).]
"On Martes martes."

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. 5th installment. Wyoming Wild Life 16(7): 23-27, illus. July 1952.
Reviews the habits and biology of the fisher, Martes pennanti. Fishers are practically extinct in Wyoming, but a few may remain in Yellowstone Park. "Decreases in numbers may be attributed to the following facts: (1) Its food habits and requirements are such that each individual requires a large amount of forage territory to live. (2) The areas suitable as fisher habitat are limited. (3) The fisher is by nature a solitary animal. (4) The rate of reproduction and survival is relatively low." By removing certain forested areas man has limited the habitat and thereby reduced the number of fishers. The relative ease with which they are trapped also quickly eliminates them. Fishers might well be given complete protection in the state.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 16(8): 20-26, illus. Aug. 1952.
Sixth installment. Review of habits and biology of weasels, with emphasis on foods and feeding.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 16(9): 30-34, illus. Sept. 1952.
This 7th installment consists of a review of the habits and biology of the mink. No information is given on the status of the species in Wyoming.

MAMMALS--MUSTELIDS--Continued

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 16(10): 24-27, illus. Oct. 1952.
This eighth installment is a review of the biology of the wolverine. The animal is nearly if not entirely extirpated in Wyoming.

MAMMALS--DOGS, WOLVES, FOXES

Arnold, David A. THE FOX BOUNTY - CONTROL OR COINCIDENCE? Michigan Conservation 21(4): 28-31. July-Aug. 1952.
Experience in Michigan shows that state and county bounties have not controlled fox populations, and that game populations fluctuate independently of fox numbers. In the fall of 1951, bounty regulations were changed to require that foxes be taken to Conservation Department district headquarters instead of to township clerks. The number of claims dropped to a surprising degree. The previous occurrence of considerable fraud is implied.

Swink, F. Nelson, Jr. EFFECTS OF THE RED FOX ON OTHER GAME. Virginia Wildlife 13(10): 20-22, illus. Oct. 1952.
Foods of red fox in Virginia farm country as determined from den remains and from 549 scats collected throughout a 15-month period. Meadow mouse, cottontail, and opossum were the leading foods, but striped skunk occurred 19 times. Some birds, including quail, were eaten. A fairly large amount of orchard grass was ingested at all seasons, and many wild cherries were eaten in the fall. The author concludes that fox predation on game mammals and birds is of negligible importance.

Walker, Eugene A. and Townsend Miller. BR'ER FOX IN TEXAS. Texas Game and Fish 10(8): 19-21, illus. July 1952.
Popular account containing some interesting statements on fluctuations. Heavy local populations are often greatly reduced by epidemics while moderate populations a few miles away are little affected. This has been observed in the past few years in 3 regions of Texas.

MAMMALS--CATS

Lambeth, R. H. A UNIFORM BOUNTY SYSTEM FOR MOUNTAIN LION. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 63-64 p.

MAMMALS--BIG GAME--GENERAL

Babbitt, John. A STOCKMAN'S VIEW OF BIG GAME MANAGEMENT. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 109-111.

Cooney, Robert F. SALT AS A MANAGEMENT TOOL. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 99-105 p.

Cousy, Faye M. BIG GAME CENSUS TECHNIQUES IN MONTANA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 153-157 p.

Lauckhart, J. Burton. EVALUATION OF BIG GAME CENSUS TECHNIQUES. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 151-152 p.

Longhurst, William M. RANGE CONDITIONS AS AN INFLUENCE ON BIG GAME PRODUCTIVITY. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 190-194 p.

MAMMALS--BIG GAME--GENERAL--Continued

Rainesalo, R. WAYS OF MARKING THE TERRITORY AMONG GAME ANIMALS (Kuinka eläimet merkitsevät elinpiirinsä). Suomen Riista 7: 48-51, illus. 1952.
In Finnish. Author's complete English summary: "The writer describes, mainly on the basis of Schumacher's and Braestrup's works, different methods of marking the territory as observed in game animals, especially moose, deer, and related species." Tells how the animals themselves place sign over their territories in the form of scent from various parts of the body, by scratching trees, and otherwise.

MAMMALS--HOOFED (Except deer)

Anonymous. KING OF WASHINGTON'S WILDLIFE - THE WAPITI. Washington State Game Bulletin 4(4): 11-12, illus. Oct. 1952.
History, distribution, and general biology in the state. Civilization is constantly encroaching on the range, but there are still about 30,000 elk in Washington. 5,000 to 6,000 may be shot annually.

Anonymous. WILD BURROS IN CALIFORNIA. Outdoor California 13(25): 4-5. June 18, 1952. [Also in Modern Game Breeding and Hunting Club News 22(6): 15. June 1952.]
Donald D. McLean of the California Department of Fish and Game reports that several thousand feral burros are rapidly becoming a nuisance in the state. They are a fast and wily breed, well adapted to the desert hills. They occupy the same range as the bighorn in the Mojave Desert and also occur in the Colorado Desert, the Saline Valley of Inyo County, and the northeastern Lassen-Modoc area. "Intolerant of other animals, the burros take over and ruin precious desert springs and water holes, destroy forage for game and stock, and are one of the few animals which will kill the young of other species..." They run in herds, leaders of which (males) fight viciously, sometimes to the death. They have practically no natural enemies. They may be hunted at any time under a state hunting license, but the hunting is rugged. "Besides providing the thrill of a first-rate chase, the wild burro's succulent flesh ranks with that of the better game animals. In fact, burro meat is restricted by State law to human consumption."

Conaway, Clinton. THE AGE AT SEXUAL MATURITY IN MALE ELK (CERVUS CANADENSIS). Journal of Wildlife Management 16(3): 313-315. July 1952.
Yearling males are sexually mature.

Crane, Harold S. RESTORATION AND MANAGEMENT OF ELK IN UTAH. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 165-167 p.

Crane, Harold S. UTAH'S ELK HERD PROVIDES INTERESTING HISTORY. Utah Fish and Game Bulletin 8(12): 1, 3, 5. Nov. 1951.
General history of elk and their management in the state. Elk were nearly extinct in 1900, were reintroduced in several areas, and by 1925 had to be closely managed to lessen crop damage. They are now managed by the Big Game Control Board, and all hunting is by special permit. The herd is kept at about 5000, with average annual harvest of about 1000. One herd had to be exterminated to end orchard damage. Regulations are manipulated to give equal bull and cow kill. Hunters prefer cows because their meat is superior. The present program satisfies sportsmen and most land owners.

Deming, O. V. TOOTH DEVELOPMENT OF THE NELSON BIGHORN SHEEP. California Fish and Game 38(4): 523-529, illus. Oct. 1952.
Traces changes in dentition from birth to old age. The full set of permanent teeth is not acquired until the age of 4 years. Individual variation is too great to permit accurate age determinations from teeth. Dental changes in various races of bighorns are similar to those of domestic sheep.

MAMMALS--HOOFED (Except deer)--Continued

Dufresne, Frank. TOO MANY MOOSE. Field and Stream 57(5): 54-57, 115-116, illus. Sept. 1952.

Great fires in southern British Columbia were followed by an abundance of willow growth. Moose came in from the north and multiplied enormously. They now number about 50,000 and in some places concentrations of 22 per square mile have been counted. Reproduction is about twice the kill. Willows are being destroyed rapidly by moose and crowded out by plant succession. Moose are starving to death, competing with livestock, and invading barnyards to eat at haystacks. The herd should be halved by cow shooting, but local people are against this, partly from sentiment, partly because fewer moose would mean less income from guiding and boarding hunters. Timber potentialities are too great to permit much new burning, and predators cannot be encouraged because of the livestock industry. Three hundred square miles of fine winter range are being flooded by a power dam. U. S. meat-hunters are temporarily discouraged by hoof and mouth disease restrictions at the border. In all, the situation is extremely difficult and calls for courageous action.

Ferrel, Carol M. and Howard R. Leach. THE PRONG-HORN ANTELOPE OF CALIFORNIA WITH SPECIAL REFERENCE TO FOOD HABITS. California Fish and Game 38(3): 285-293, illus. July 1952.

History of antelope in state; populations and harvests, 1942-51; contents of 83 stomachs representing fall, winter, and spring. Foods are tabulated in detail. Very little grass is eaten, but forbs and browse are important. Many forbs important to antelope are not palatable even to sheep and many of them are indicators of overgrazing. Sagebrush is a major food at all seasons and makes up 95% of the diet in December. Protein content of 14 samples of sage varied through the year from 8.9 to 14.5%. Neither scarcity of forage on the winter range nor competition with livestock is serious, but scarcity of open range is limiting. Some workers consider predation important. A small amount of crop damage is reported.

Hanscum, Charles W. GAME-LIVESTOCK RELATIONSHIPS. Wyoming Wild Life 16(8): 4-9, illus. Aug. 1952.

Some facts and figures on the problems of managing big game. To keep elk from haystacks in the winter, costly fences are used, and elk are fed at a cost of $15 per head per winter. When property is damaged the state reimburses the owner. Landowners are paid $3 or $5 for each antelope killed on their land. Special hunts are used to reduce troublesome populations. Tables are given for antelope coupon statistics, 1951, and for depredation and control costs, 1951.

Hanscum, Charles W. WINTER ELK FEEDING. Wyoming Wild Life 16(10): 2. Oct. 1952.

4,338 tons of hay have been purchased for feeding elk at 13 localities in Wyoming during the coming winter. Concentrates are also used. Cost of this program in 1951 was $136,698. There are objections other than cost to this feeding, but with much of the winter range now unavailable there is no other course if elk are to be maintained in large numbers.

Mabery, Chuck. PRONGHORN IN ARIZONA. Arizona Wildlife-Sportsman 23(9): 34-48, illus. Sept. 1952.

Though devoted chiefly to hunting areas, hunting methods, and care of bagged game, this article contains a fair amount of information on status and habits in the state. An all-time high of 1225 permits were available for the 1952 hunt. Population in the state is estimated to be 5,223, nearly double that of 1951. Only bucks are being hunted legally. The desired sex ratio is 1 buck to 5 does. Antelope have recovered well from their low earlier in the century, but they have had ups and downs for unknown reasons. Predator control is credited for much of the increase. Antelope now spend a large part of their time in semi-forested mountain areas because lower areas are overgrazed.

Mason, Ellis. FOOD HABITS AND MEASUREMENTS OF HART MOUNTAIN ANTELOPE. Journal of Wildlife Management 16(3): 387-389. July 1952.

MAMMALS--HOOFED (Except deer)--Continued

O'Connor, Jack. DESERT REVIVAL. THE BIGHORNS ARE BACK! Outdoor Life 110(3): 30-31, 92-94, illus. Sept. 1952.
Tells of the recovery of desert bighorns as a result of legal protection, predator control, refuges, and water developments. Estimated numbers in different areas are listed. Shooting of some rams is believed to favor lamb production. Nevada has begun controlled hunting and Arizona is planning to begin.

Porsild, Alf Erling. CARIBOU IN GREENLAND. Arctic Circular 4(4): 52-58. 1951. [From Polar Record 6(44).]
"Abundance of caribou in North American Arctic and Greenland."

Rognrud, Merle J. MT. NEBO ELK PRODUCTIVITY. Utah Fish and Game Bulletin 9(6): 1-2. July 1952.
The Mt. Nebo area is in the Wasatch Range of Utah. The elk here created a problem by increasing despite hunting considered heavy enough to control them. Work in 1951 "revealed a 100:220:116 bull-cow-calf ratio, or a 36.2 percent increment to the parent herd. Hunters then removed 807 elk, and the winter census showed about 1050 animals remained on Nebo. Calves comprised 31 percent of the wintering herd. A change in herd composition from 26.6 percent before hunting season is explained by only a 5 percent calf harvest in the total kill. Yearling elk made up 23 percent of the 1951 hunter take. ...if calf removals have approximated the low 1951 removal, a high annual survival of the herd increment is indicated. In addition, a relatively high proportion of younger animals occur in the herd because of recent selective hunting of the larger animals. Hence, the current level of productivity may be expected to at least continue..." Increase seems to be more rapid than in some herds; instances of breeding yearlings and twin calves are known.

Russell, Paul. CRISES OF ANTELOPE MANAGEMENT. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 112-116 p.

Voipio, Paavo. HOW SHALL WE GET OUR MOOSE POPULATION PALMATED IN TYPE? (Miten hirvikantamme voitaisiin saada lapiosarviseksi?) Suomen Riista 7: 52-59, illus. 1952.
In America we still tend to lessen the quality of our game stocks by adverse selection in the form of persistent trophy hunting. The difficulty was long since encountered in Europe and is being countered by culling out undesirable individuals and leaving better ones to breed. In Finland too many moose now have deer-type antlers (cervina-typed moose) rather than properly palmate antlers. This paper, in Finnish with English summary, recommends not only exterminative shooting of cervina-type moose, but great reduction of populations of regions where they are common, so that population pressure will cause immigration of moose from regions where the palmate type is dominant.

MAMMALS--DEER

Anonymous. DEER KILL TO DROP UNDER BUCK LAW. Wisconsin Conservation Bulletin 17(9): 26-27. Sept. 1952.
For 1952 Wisconsin reverts to a forked-horn-buck law. The 3 past years of any-deer or antlerless deer hunting have cut the herds of some regions enough that the range is recovering, and heavy harvests are no longer desirable. Most of northern Wisconsin, however, still has too many deer and 39% of the yards there are in poor condition. Controlled hunting, with pressure distributed as needed, is the desired solution, but authority for this has not been granted by the legislature.

Anonymous. 1951 DEER HUNTING INFORMATION. Michigan Department of Conservation, Game Division. 4 unnumbered p., graphs. 1952.
Michigan. Detailed hunting statistics, by counties, 1949-51. Graphs show number of hunters, hunter success, and deer kill, 1932-51. Winter starvation

MAMMALS--DEER--Continued

loss was high in 1950-51, about 40,000, and the 1951 harvest reflected the drop. The 1952 legislature authorized the Commission to make deer regulations for the Lower Peninsula. To reduce starvation and range damage, the Commission is permitting hunters to shoot any deer in the northern half of the Lower Peninsula during the last 3 days of the 1952 season. The results may permit greater liberalization another year.

Barick, Frank B. DEER TRAPPING COORDINATED WITH WEATHER. Wildlife in North Carolina 16(10): 10-11, 20, illus. Oct. 1952.
Much time and effort was saved by setting deer traps only when a storm was approaching. Advance information from the Weather Bureau was used. Correlation of weather and catches is shown by table and graph.

Blackstock, F. E. DIET OF DEER INFLUENCED BY RANGE. Texas Game and Fish 10(8): 18. July 1952.
A résumé of R. B. Davis's work on the King Ranch in South Texas. It discusses variation in deer foods with habitat and season.

Bradbury, W. Earle. 1951 MAINE DEER KILL, TOWN AND COUNTY TOTALS. Maine Department of Inland Fisheries and Game. Large 1 p. folding map. 1952.
Shows kill for each district of the state, and gives state and county totals.

Gilfillan, Merrill C. OHIO DEER FACTS. HOW FAST DO OHIO DEER INCREASE? Ohio Conservation Bulletin 16(8): 5, 32, illus. Aug. 1952.
Does average 1.6 embryos. Twins are common and triplets are not rare. 96% of adult females and most female fawns carry young. The peak of breeding is during mid-November. The peak of fawning is about the first of June. Dogs and cars cause considerable loss.

Gilfillan, Merrill C. OHIO DEER FACTS. HOW BIG ARE OHIO DEER? Ohio Conservation Bulletin 16(9): 29, illus. Sept. 1952.
Average weights, by sex and age classes; weight and hind foot length, by sex and area (mostly counties). Northern Ohio deer, feeding on apples, corn, and soy beans, averaged 127.8 pounds. Southern Ohio deer, feeding mainly on native foods, averaged 114.0 pounds.

Handley, Rolland B. DEER MANAGEMENT IN MISSISSIPPI. Mississippi Game and Fish 16(3): 3, 8, 10, illus. Oct. 1952.
General account of the restoration of deer through importation, transplanting, refuges, and enforcement. In the early 1930's there were only a few hundred deer in the state. Now there are about 50,000 and the objective is 200,000. The chief limiting factors are poachers and dogs. Public deer hunting areas are being established, and a deer research project is under way.

Hill, Jerry W. LIFE HISTORY AND MANAGEMENT OF THE CACHE DEER HERD. M. S., Utah State Agricultural College, June 1952.

Howard, Walter E. and Henry A. Hjersman. DEER REPELLENT SPRAYS NOT HARMFUL TO FOLIAGE ON TWO-YEAR-OLD TREES. Journal of Wildlife Management 16(3): 390-391. July 1952.

Illige, Denis J. and A. C. Edwards. FIELD-LABORATORY STUDIES OF MULE DEER REPRODUCTION IN ARIZONA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 195-198 p.

Jones, Gardiner F. RESEARCH AT THE CLEMONS TREE FARM. Washington State Game Bulletin 4(4): 4-5, 9, illus. Oct. 1952.
Popular account of results of range and laboratory studies of blacktail deer in Washington which presumably will be reported more fully elsewhere. Subjects discussed include: local movements, winter losses, fawn tagging, survival, feeding experiments, range condition surveys, populations, need of heavier

MAMMALS—DEER—Continued

hunting, nutritional value of native foods. Population is said to be about 40 per section, which is just about carrying capacity. Hunters can take 3 bucks and 6 other deer per section without reducing the herd.

McCullough, James M. AN APPRAISAL OF DEER DAMAGE TO NATURAL FOREST REPRODUCTION ON FENCED AND UNFENCED PLOTS IN SELECTED LOCALITIES IN PENNSYLVANIA. M. S. thesis, Pennsylvania State College, June 1952.

McCullough, James M. DEER - OR TIMBER? Pennsylvania Game News 23(6): 30-35, illus. Sept. 1952.
A study by the Pennsylvania Cooperative Wildlife Research Unit indicates that heavy deer populations can cause serious reductions in the establishment and growth of forest reproduction on newly cut areas of small size. It is not feasible to counteract this by artificial planting or other practices. Valuable hardwoods were among the trees affected. Forest replacement is important enough that it is advisable to thin out the deer by shooting both sexes in suitable numbers. Figures are given on damage caused by light and heavy deer populations.

McKean, William T. NORTH DAKOTA DEER TRENDS. North Dakota Outdoors 15(1): 4-5, illus. July 1952.
By a suitable combination of buck seasons, any-deer seasons, and closed seasons, the state has managed to have a growing herd and a minimum of range and crop damage. A graph shows estimated harvest and estimated population of major deer areas, 1940-1951. A series of maps shows what regions of the state were open to hunting of various classes of deer, 1945-50.

Robb, Dunbar. SOME PROSPECTS ON DEER. Missouri Conservationist 13(10): 1-3, 12, illus. Oct. 1952.
The end of deer restocking in Missouri is in sight, for most of the suitable areas have been stocked. More and more counties have been opened to hunting in recent years and many deer refuges have been abolished. The growing problem is to get proper harvests to protect range and crops. This is complicated by the variety of local conditions. In 1952, shooting of any deer will be legal in 23 counties, and fork bucks may be shot in 19 others. Deer hunting pressure in the state is relatively light. One in 6 deer hunters was successful in 1951.

Robinette, W. Leslie, Odell Julander, Jay S. Gashwiler, and Justin G. Smith. WINTER MORTALITY OF MULE DEER IN UTAH IN RELATION TO RANGE CONDITION. Journal of Wildlife Management 16(3): 289-299. July 1952.
"...on properly stocked ranges the loss is only slightly greater during severe winters than it is during moderate winters. On the other hand, the loss on depleted ranges in severe winters may exceed the mortality incurred during a moderate winter by several times."

Smith, Arthur D. DIGESTIBILITY OF SOME NATIVE FORAGES FOR MULE DEER. Journal of Wildlife Management 16(3): 309-312. July 1952.
"Curl leaf mahogany appeared to be better than bitterbrush and juniper poorest of the three, considering both amount and the character of the digestible nutrients." Alfalfa hay is well digested by deer, but its use is wasteful because deer carefully pick it over, rejecting stems and scattering leaves.

Tarr, Joseph A. THE VALUE OF CLEAR-CUTTING IN STRIPS TO PRODUCE BROWSE FOR DEER IN MIXED OAK FORESTS OVER A FOURTEEN YEAR PERIOD. M. S. thesis, Pennsylvania State College, Aug. 1952.

Wright, Charles W. A SURVEY OF WHITE-TAILED DEER (ODOCOILEUS VIRGINIANUS SUBSP.) DAMAGE, DAMAGE CONTROL METHODS, AND POPULATION CHARACTERISTICS IN NEW JERSEY. New Jersey Division of Fish and Game, Final Report Project 21-R-2: 1-71, graph. April 1950.
The bulk of the report is devoted to crop damage statistics, results of experiments with 3 repellents, and analyses of weights. Other topics treated include age composition in a sample of 80, and the ratio of antlered to antlerless deer. Detailed summary of over 4 pages.

MAMMALS--MARINE

Bartholomew, George A., Jr. REPRODUCTION AND SOCIAL BEHAVIOR OF THE NORTHERN ELEPHANT SEAL. University of California Publications in Zoology 47(15): 369-471, illus. 1952. $1.50. [From Monthly Checklist of State Publications 43(9).]

Darling, F. Fraser. THE ATLANTIC GRAY SEAL. Animal Kingdom 55(4): 122-126, illus. July-Aug. 1952.
A popular article on the range, habits, and economics of this seal. The species was once much depleted but is now increasing fairly rapidly and may again become a valuable resource. Colonization of new areas with this seal would be easy, for before the young go to sea they are abandoned by the mother and are prepared for long fasting followed by self-taught feeding. The species is rarely injurious to fisheries and may do some good by feeding on predatory fish.

Kellogg, W. N. and Robert Kohler. REACTIONS OF THE PORPOISE TO ULTRASONIC FREQUENCIES. Science 116(3010): 250-252, diagram. Sept. 5, 1952.
Evidence that the porpoise, "like the bat, may orient itself with respect to objects in its environment by echolocation." Apparently porpoises are not sensitive to such high frequencies as are bats.

Kritzler, Henry. OBSERVATIONS ON THE PILOT WHALE IN CAPTIVITY. Journal of Mammalogy 33(3): 321-334. Aug. 1952.

Mohr, Erna. ZUR KENNTNIS DER BANDROBBE, "HISTRIOPHOCA" FASCIATA (ZIMMERMANN 1783). Zoologischer Anzeiger Bd. 147, Heft 7/8: 187-195, illus. [From Polar Record 6(44).]
"Summary of knowledge of Banded Seal."

Pedersen, Alwin. ROSMARUS: EN BERETNING OM nVALROSSENS LIV OG HISTORIE. København, Gyldendal. 98 p., illus. 1951. [From Polar Record 6(44).]
"Well-illustrated popular account of Walrus (Odobaenus rosmarus), based on observations in East Greenland; notes on earlier accounts."

Wilke, Ford and Karl W. Kenyon. NOTES ON THE FOOD OF FUR SEAL, SEA-LION, AND HARBOR PORPOISE. Journal of Wildlife Management 16(3): 396-397. July 1952.

BIRDS--GENERAL

Cockrum, E. Lendell. A CHECK-LIST AND BIBLIOGRAPHY OF HYBRID BIRDS IN NORTH AMERICA NORTH OF MEXICO. Wilson Bulletin 64(3): 140-159. Sept. 1952.
Includes only hybrids from presumably wild parents. 30 hybrids are listed for the Anseriformes and Galliformes alone.

Hickey, Joseph J. SURVIVAL STUDIES OF BANDED BIRDS. U. S. Fish and Wildlife Service, Special Scientific Report, Wildlife no. 15: 1-177, graphs. June 1952.
This is a long and important contribution to the use of life table techniques in the study of birds. The methods and complications in their use are described. Errors to be anticipated in banding data are pointed out. Life table analyses and productivity data are applied to studies of 10 species of 8 orders: mallard, redhead duck, mourning dove, double-crested cormorant, black-crowned night heron, marsh hawk, Caspian tern, barn owl, great horned owl, and blue jay. The last part of the paper consists of 3 chapters on the mallard: Indices of mortality, hunting pressure, and populations; Variations in mallard mortality rates; Dynamics of mallard populations. Each of the 14 chapters is well summarized. There is a 12-page bibliography.

Kellogg, P. R. and A. A. Allen. AMERICAN BIRD SONGS, VOL. II. Albert R. Brand Bird Song Foundation, Laboratory of Ornithology, Cornell University. 1952? [From notice by A. A. Saunders, Bird-Banding 24(3).]
"This is a set of five large disks of phonograph records of the songs or calls of 51 species of wild birds...The voice of Prof. Allen explains the songs or calls before each species and at other appropriate intervals."

BIRDS--GENERAL--Continued

Mitchell, Robert T. CONSUMPTION OF SPRUCE BUDWORMS BY BIRDS IN A MAINE SPRUCE-FIR FOREST. Journal of Forestry 50(5): 387-389. May 1952.
Stomach contents of 737 birds collected during budworm outbreaks in 1949 and 1950. Many species of small birds are represented. Foods other than budworms are not treated in detail, for the paper is devoted to showing how much budworm material was eaten by different species. Volumetric data are given in tables. Heaviest pressure on budworms was exerted by warblers, thrushes, and sparrows. Wandering flocks of cedar waxwings and purple finches also fed extensively on budworms.

Sherman, Althea R. BIRDS OF AN IOWA DOORYARD. Edited by Fred J. Pierce. Christopher, Boston. 270 p. 1952. $3.75. [From review by M. M. Nice, Bird-Banding 24(3).]
Includes detailed life history studies of various birds. The authoress was one of the great pioneers in this field in America. Her observations were extremely exact, and the book contains much of scientific value.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Berger, Andrew J. THE COMPARATIVE FUNCTIONAL MORPHOLOGY OF THE PELVIC APPENDAGE IN THREE GENERA OF CUCULIDAE. American Midland Naturalist 47(3): 513-605, illus. May 1952.

Dowling, Paul B. A DETERMINATION OF THE AUDIO-BEHAVIOR THRESHOLDS OF CERTAIN GALLINACEOUS BIRDS. M. S. thesis, Pennsylvania State College, Aug. 1952.

Martin, Alexander C. and Arnold L. Nelson. EVERY OUNCE COUNTS. Sports Afield 128(3): 17-23, illus. Sept. 1952.
Popular article on game bird weights. Average and top weights are given, often with notes on variation, for most upland game birds and several kinds of waterfowl. Illustrated with 4 pages of colored drawings and some black and white sketches by Bob Hines.

Myers, Betty B. THE VOLUME OF BIRDS. M. S. thesis, Pennsylvania State College, Jan. 1952.

Odum, Eugene P. and Jesse D. Perkingson, Jr. RELATION OF LIPID METABOLISM TO MIGRATION IN BIRDS. SEASONAL VARIATION IN BODY LIPIDS OF THE MIGRATORY WHITE-THROATED SPARROW. Physiological Zoology 24(3): 216-229. 1951. [From review by D. S. Farner, Bird-Banding 23(3).]
Study of lipid content of body at different seasons. "It is tentatively concluded that lipid deposition is a necessary prerequisite for migration and that an individual bird will begin migration only when this is completed, other conditions being favorable."

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Gabrielson, Ira N. NOTES ON THE BIRDS OF THE NORTH SHORE OF THE GULF OF ST. LAWRENCE. Canadian Field-Naturalist 66(2): 44-59, illus. March-April 1952.
In June and July of 1947 the author and Dr. Harrison Lewis traveled along most of the north shore of the Gulf studying the status of waterfowl and the restorative values for them of the government sanctuaries. At the beginning of the trip, winter conditions prevailed to an unusual extent and mortality of small birds was heavy. As a result, breeding small birds were later extremely scarce. Small mammals, rabbits, and grouse were rare to the vanishing point in localities where they were common the year before. The bulk of the paper consists of an annotated list that contains considerable information on abundance, breeding, and habits, particularly for sea birds. The sanctuaries appear to be serving their purpose well, for outside them protection of sea fowl is poor and populations are generally low. Eiders have benefited not only from sanctuaries, but also because Dominion officials have managed to interest some local people in down collection. The great black-backed gull is a serious predator of eiders and some control is practiced.

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Lemmon, Robert S. OUR AMAZING BIRDS: THE LITTLE KNOWN FACTS ABOUT THEIR PRIVATE LIVES. American Garden Guild and Doubleday & Co., Garden City, N. Y. 1-239 p., illus. 1952. $3.95.

A popular and attractive book that all bird lovers, beginners or veterans, should enjoy. 102 American birds of varied habits were chosen as subjects for brief, interesting, accounts that may be described as informative character sketches. These contain solid information despite reading as easily as a novel. Each species is illustrated by pleasing black and white drawings by Don Eckelberry. The drawings, which occupy perhaps a third of the book, often show portions of the habitat, and some of them are 2-page panoramas.

Manning, T. H. and A. H. Macpherson. BIRDS OF THE EAST JAMES BAY COAST BETWEEN LONG POINT AND CAPE JONES. Canadian Field-Naturalist 66(1): 1-35, illus. Jan.-Feb. 1952.

Based on collections and observations made in the summer of 1950. The paper is essentially a copiously annotated list with special attention to distribution and abundance, with occasional notes on taxonomy.

Reed, Chester A. BIRD GUIDE. LAND BIRDS EAST OF THE ROCKIES. Revised edition. Doubleday & Co., Garden City, N. Y. 1-238 p., illus. 1951. Regular edition $1.75, de luxe edition $2.25. [From review by W. E. Godfrey, Canadian Field-Naturalist 66(2).]

The famous Reed Bird Guide on which many ornithologists cut their teeth now appears in revised form. "The newest edition is completely revised. The colored plates are greatly improved, nomenclature and ranges are brought up to date, and there is much good advice to the beginner packed into a few pages of the introduction...All are illustrated in color and, in cases where the sexes or young are colored differently, these different plumages are shown. There are notes on the field characters, habits, voice, nest and eggs, and ranges of the birds treated, a color key as an additional aid to identification, line drawings showing the topography of birds, and an index." The book is still genuinely pocket size, 5½ x 3¼. Considering the scope and cost, there probably is not an equally good buy in bird books today, especially for the beginner or for the person whose interest is casual.

Soper, J. Dewey. THE BIRDS OF PRINCE ALBERT NATIONAL PARK, SASKATCHEWAN. Canadian Wildlife Service, Wildlife Management Bulletin Series 2, no. 4: 1-83, illus. June 1952.

Description of this large park and notes on abundance, local distribution, and habitat of 175 kinds of birds. A table gives the percent of occurrence of duck species seen on 4 lakes in June; the data are believed to represent relative abundance of different ducks in the park as a whole.

BIRDS--NUMBERS AND NUMBER FLUCTUATIONS

George, John Lothar. THE BIRDS ON A SOUTHERN MICHIGAN FARM. Ph. D. thesis, University of Michigan, 1952. 413 p. [From long abstract in Dissertation Abstracts 12(4).]

A detailed ecological analysis. "Information for each species was gathered on survival, mortality, spacing, groupings, numbers, habitat, densities, and reproductive increase, from September, 1947 to August, 1950." 1069 individuals of 47 species were color-banded. Data are given for 135 species, with emphasis on the 45 nesting species. Special attention is given to populations, territories, winter home ranges, and factors affecting them. Nesting success, survival, and changes in population composition are also discussed at length.

Kluijver, H. N. THE POPULATION ECOLOGY OF THE GREAT TIT, PARUS M. MAJOR L. Ardea 39(1/3): 1-135. 1951. [From review by D. S. Farner, Bird-Banding 24(3).]

"...one of the major contributions to our knowledge of avian population dynamics." The paper represents effective utilization of a prodigious mass of data gathered since 1912. Many topics are treated in detail. Farner's long review summarizes many, but not all, of the major conclusions.

BIRDS--CONTROL, MORTALITY

Eng, Robert L. A TWO-SUMMER STUDY OF THE EFFECTS ON BIRD POPULATIONS OF CHLORDANE BAIT AND ALDRIN SPRAY AS USED FOR GRASSHOPPER CONTROL. Journal of Wildlife Management 16(3): 326-337. July 1952.

Stewart, Paul A. WINTER MORTALITY OF BARN OWLS IN CENTRAL OHIO. Wilson Bulletin 63(3): 164-166. Sept. 1952.

BIRDS--QUAIL

Durell, Jim. QUAIL KILLED ON MOST OF GOOD BICOLOR PLOTS. Kentucky Happy Hunting Ground 8(4): 24-25, illus. July 1952.
A report on seed maturation and wildlife use of 125 bicolor plantings in Kentucky. Quail were killed in 61% of all good, mature plantings that were hunted. Bicolor seed frequently was found in quail crops. Doves and grouse utilized at least 2 plots, and rabbits gnawed bark in 20% of the plots. Mature, thrifty bicolor plantings matured 87% of their seed before killing frost. Young or slow growing bicolor matures its seed weeks later than do mature, thrifty plants.

Grant, Jack. A MILLION MORE QUAIL. Florida Wildlife 6(3): 12-13, 48, illus. Aug. 1952.
Studies by Florida wildlife men "indicate definitely that where food is the limiting factor the quail population can be greatly increased by the use of feeders." The feeder originated by D. M. Webb and made by C. H. and W. H. Scruggs of Tampa is said to increase the size and number of coveys in many areas. No increase in disease, predation, or tameness has been found. The latest design of feeder is much improved and over 8000 have been sold. Feeders are placed about 1/4 mile apart, near heavy cover. They are especially valuable in late winter and early spring. A feeder used by one covey must be filled every 3 weeks. [It would be interesting to see a comparison made of the relative cost and effectiveness of feeding quail by feeders and by special plantings.]

Herndon, Paul. A QUAIL WING SURVEY. Tennessee Conservationist 17(7): 16-17, 29, illus. July 1952.
Tells how age and sex ratios are determined and gives data derived from 367 wings of quail collected in Tennessee from Nov. 22 to Dec. 10, 1951.

Kirkpatrick, C. M., H. E. Moses and J. T. Baldini. THE EFFECTS OF SEVERAL ANTIBIOTIC PRODUCTS IN FEED ON EXPERIMENTAL ULCERATIVE ENTERITIS IN QUAIL. American Journal of Veterinary Research 13(46): 99-101. Jan. 1952.

Kirkpatrick, C. M., H. E. Moses and J. T. Baldini. STREPTOMYCIN STUDIES IN ULCERATIVE ENTERITIS IN BOBWHITE QUAIL. I. RESULTS OF ORAL ADMINISTRATION OF THE DRUG TO MANUALLY EXPOSED BIRDS IN THE FALL. Poultry Science 29(4): 561-569. July 1950.

Kirkpatrick, C. M., H. E. Moses and J. T. Baldini. STREPTOMYCIN STUDIES IN ULCERATIVE ENTERITIS IN BOBWHITE QUAIL. II. CONCENTRATIONS OF STREPTOMYCIN IN DRINKING WATER SUPPRESSING THE EXPERIMENTAL DISEASE. American Journal of Veterinary Research 13(46): 102-104. Jan. 1952.

Kirkpatrick, Charles M. and A. Carl Leopold. THE ROLE OF DARKNESS IN SEXUAL ACTIVITY OF THE QUAIL. Science 116(3011): 280-281, graph. Sept. 12, 1952.
Report of experiments on photoperiodism. "Full sexual activity, evidenced both by ovulation (or ripe follicles) and free spermatozoa, was obtained in all groups receiving either long days or short days with night interruptions. In contrast the group receiving short days with no interruption of the dark period showed no reproductive development...It would appear that the present demonstration with bobwhite quail is the first clarification of the importance of the dark period in the photoperiodic response of any higher animal."

BIRDS--QUAIL--Continued

Lay, Daniel W. BOBWHITE QUAIL IN RELATION TO LAND MANAGEMENT IN PINE WOODLAND TYPE. Texas Game and Fish Commission, FA Report Series 10: 1-54, illus. Aug. 1952.

A good substantial study of quail ecology and management in East Texas, where lands originally in pine are now in tall grass with scattered pines, and these in turn are being replaced by heavily grazed improved pastures. Successional changes and factors governing them are discussed in relation to quail. Few of these changes favor quail, which prefer a weed stage, but the author shows how measures of benefit to quail can be worked into the program wisely and economically. He also gives quantitative data on the effect of various land use practices on quail, and on quail food habits in the region. Kobe lespedeza is extremely important. Moderate grazing and preservation of scattered escape cover are also important. Where needed, multiflora rose and bicolor or thunbergii lespedezas are very helpful. Suggestions for growing them are given. Certain paspalums are worthy of use. Also discussed are effect of weather on populations, winter losses, sex and age ratios, shuffling of birds between coveys, turnover, local movements, and seed yields of quail food plants. Predators had little apparent effect; quail populations were determined by weather and habitat conditions.

Lee, Levon. RESULTS OF A FOUR-YEAR QUAIL MALARIA STUDY IN NEW MEXICO. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 121-123 p.

Miller, Townsend. DIRECT AID FOR QUAIL. Texas Game and Fish 10(8): 2-5, illus. July 1952.

Value and use of bicolor and multiflora for bobwhites in Texas. Plantings are yielding coveys in areas where no others are found. Regions of the state where these plants will succeed are outlined, and recommendations for suitable spacing are made.

Nielson, Lynn R. FACTORS AFFECTING CALIFORNIA VALLEY QUAIL POPULATIONS IN UINTAH COUNTY, UTAH. M. S., Utah State Agricultural College, June 1952.

Reeves, Maurice C. MECHANICAL AIDS USEFUL IN STUDYING BOBWHITE QUAIL. Journal of Wildlife Management 16(3): 316-319, illus. July 1952.

Banding cage, collapsible cock-and-hen trap, improved covey trap, slide rule for determining age of quail.

Ridley, Bromfield. COVER, FOOD MUST BE AVAILABLE FOR BETTER WILDLIFE REFUGES. Kentucky Happy Hunting Ground 8(4): 12-13, illus. July 1952.

A summary of the Kentucky work that proved the futility of attempting to encourage quail simply by banning hunting on various tracts, some of which were poor for quail. Quail populations varied with habitat conditions, not with degree of protection.

Ridley, Bromfield L. EFFECTS OF UNMANAGED REFUGES AS A QUAIL RESTORATION TECHNIQUE AND IMPORTANCE OF FOXES AS A LIMITING FACTOR OF QUAIL. [Cover title: Unmanaged refuges as a quail restoration technique.] Kentucky Division of Game and Fish, Final Report Federal Aid Project W-19-R. 1-38 p. + 11 maps. April 1952.

The final, detailed report on the value of unimproved quail refuges. In short, they had none. Quail production varied with quality of habitat. Hunting had practically no effect on the following year's harvest. Suitable interspersion of land-use types is important and is analyzed, as are the effects of various farming practices. Korean lespedeza was the most important domestic food during the colder months because of its availability, but at this season native foods are more important than generally realized. Agricultural practices unfavorable to quail include: intensive grazing, clean farming, mowing, trend toward plants less useful to quail (replacement of Korean lespedeza by fescue, for example). Very little fox predation on quail was found, and total predation was not excessive at any time.

BIRDS--QUAIL--Continued

Ross, Fred. CALIFORNIA'S QUAIL DEVELOPMENT PROGRAM. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 124-130 p.

Sayama, Kenji, and Oscar Brunetti. THE EFFECTS OF SODIUM FLUOROACETATE (1080) ON CALIFORNIA QUAIL. California Fish and Game 38(3): 295-299. July 1952.
California quail are highly susceptible to 1080. The minimum lethal dose lies between 1 and 5 mg./kg. of body weight. Death occurs in about 3 hours. Symptoms and pathological findings are described. Pathological changes are not specific enough for diagnosis.

Stanford, Jack A. WHIRRING WINGS, THE BOBWHITE QUAIL IN MISSOURI. Missouri Conservation Commission. 1-89 p., illus. 1952. Not available for free distribution outside Missouri. No price stated.
This booklet deserves national distribution and wide use. It is one of the finest fictional treatments of technical information that the reviewer has seen--a beautiful example of how well wildlife information can be popularized. The first and greater part of the booklet is a month-by-month story of the quail of a Missouri farm. The story is told interestingly, simply, and skilfully, with enough detail for a fully rounded picture of quail life and behavior. The birds thrive or perish realistically. Their dependence on habitat conditions and their response to management are brought out clearly but not overstressed. Any adult or high school student who is interested in wildlife should enjoy the story for its own sake and for the light it throws on the daily lives of the birds. Sketches by Charles Schwartz and photographs brighten the already lively text. The second part of the booklet (20 pages) discusses quail management, giving a great deal of practical information on many topics. A brief appendix contains quail production graphs and illustrated instructions for determining age of quail.

BIRDS--PHEASANTS

Bell, Thomas A. HELP THE PHEASANT. Wyoming Wild Life 16(7): 18-19. July 1952.
Pheasants on Wyoming farm and range lands can be helped by protecting odd spots, as by fencing, and by improving such spots with plantings of wild rose, chokecherry, wild plum, hawthorne, wild grape, Russian olive, or caragana. Proximity of winter food and cover is critical.

Casebeer, Robert L. HABITAT IMPROVEMENT PROGRAM PROVIDES FOOD AND COVER FOR UPLAND GAME BIRDS. Idaho Wildlife Review 5(1): 4-6, illus. July-Aug. 1952.
The state of Idaho is doing much of the actual planting and cultivation needed to produce winter food and cover for pheasants. This article discusses aims and methods and lists the plants being tried.

Figge, Harry J. 1951 PHEASANT MANAGEMENT PRACTICES IN COLORADO. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 117-120 p.

Hart, Chester M., John F. Davis, and Wilbur F. Myers. PHEASANT COOPERATIVE HUNTING AREA RESULTS, 1951. California Fish and Game 38(4): 597-604, map and graphs. Oct. 1952.
Hunting statistics for 11 such areas in California. Number and size of the areas is being increased, and hunter use and hunter success are increasing, as shown by comparisons with 1949 and 1950 results. 1951 success was 0.40 pheasants bagged per hunter day. Nearly 20% of all pheasant tag buyers used the cooperative areas. "The 15,267 game farm birds stocked on the areas yielded a 60.8 percent return over-all, varying from a low of 27.0 percent from early releases in July to 70.4 percent from in-season liberations." Costs of the game farm pheasants are not given.

BIRDS--PHEASANTS--Continued

Kozicky, E. L. and G. O. Hendrickson. THE PRODUCTION OF RING-NECKED PHEASANTS IN WINNEBAGO COUNTY, IOWA. Iowa Academy of Science 58: 491-495, graph. 1951.
Rate of reproduction on the study area in 1941 was exceptionally high despite the fact that the spring population was unusually high. The cause is still obscure, and the phenomenon deserves further study. Authors' summary: "1. An analysis of ring-necked pheasant production factors on the Winnebago Research Area are given for 1939-41 and 1949-50. 2. The high rate of production in 1941 is postulated to be the result of an increased nesting effort. 3. The low rate of production in 1950 resulted from the high percentage of nests lost and hens killed or injured during the first mowing of hay. Weather conditions, favorable for the growth of hay, forced the farmers to mow when a high percentage of the nests were in incubation."

Shick, Charles. A STUDY OF PHEASANTS ON THE 9,000-ACRE PRAIRIE FARM, SAGINAW COUNTY, MICHIGAN. Michigan Department of Conservation. 1-134 p., illus. June 1952.
This detailed paper is based on some 3 years' work by several biologists. The report will be of considerable value to pheasant workers, despite the delay of nearly 10 years in publication. It covers year-round studies of pheasant movements, nesting success, brood production, and annual turnover, as well as the various factors affecting pheasants. The Prairie Farm is isolated by drainage ditches and is crossed by other ditches that provide 11.5 miles of ditchbank per square mile. Ditchbanks and other uncultivated areas provide approximately 2,500 acres of nesting area, aside from cultivated land. Spring pheasant populations averaged about 14.5 birds per hundred acres. The area was heavily hunted and the spring sex ratios averaged about 1 cock to 7 hens. Perhaps of greatest significance is the discussion of hunting and game yield, where it is demonstrated that almost unlimited hunting pressure during the 22-day season did not result in overshooting.--Fred H. Dale.

Trautman, Carl G. PHEASANT FOOD HABITS IN SOUTH DAKOTA AND THEIR ECONOMIC SIGNIFICANCE TO AGRICULTURE. South Dakota Department of Game, Fish and Parks, Technical Bulletin no. 1. vi + 89 p., illus. 1952.
A thorough and well prepared bulletin based on field study and analysis of contents of 1416 crops. Foods of juveniles and foods of adults through the year are considered in detail. Starving pheasants and starvation foods are described. Feeding activities and utilization of agricultural crops by pheasants are given especial attention. Pheasants do some damage but much of the grain they eat is waste. Management recommendations stress the importance of yellow corn in providing vitamin A in the winter, and the importance of woody cover plantings. Russian olive fruits proved of negligible importance to pheasants; they were found only in one specimen, though abundant in the region. The paper has a 3-page summary and a 13-page abstract.

BIRDS--GROUSE, PARTRIDGE, ETC.

Anonymous. PRAIRIE CHICKEN NUMBERS LOW IN NORTHWEST. Oklahoma Game and Fish News 8(7-8): 15. July-Aug. 1952.
Lesser prairie chickens are quite scarce in Northwestern Oklahoma. The range is restricted (to the sandhills), too much of it is heavily grazed, and last year's harvest was very heavy in many places. It is believed that most of the birds shot in Ellis County, Oklahoma are produced in Texas and move across the state line to feed in grain fields.

Blomquist, Wallace. THE GROUSE OUTLOOK. North Dakota Outdoors 15(2): 18-20, illus. Aug. 1952.
Sharptails are still at a peak in North Dakota. Each year they take over a little more prairie chicken range. Prairie chickens remained fairly stable for a number of years but have dwindled rapidly in the last 3 years. Ruffed grouse, found in the Pembina Hills and Turtle Mountains, are at or near their peak. Sage grouse, present in 2 counties, survived heavy snows in good shape. There are not shootable numbers in the state and more of the habitat is being plowed up every

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

year. Hungarian partridge yielded a good harvest last fall and are still increasing, especially in the northeastern section, which is not considered good upland game bird habitat. In all, the best upland game bird shooting in years is anticipated in 1952.

Dalrymple, Byron W. THE BIRD THAT MADE THE GRADE. Sports Afield 128(2): 26-27, 60-63, illus. Aug. 1952.
The chukar partridge seemed to have failed in the U. S., but recently has established itself in large numbers in rugged desert country of the Northwest. The species is hard to hunt and well able to take care of itself. Game farm birds are seldom successful in the wild, but transplants of wild birds do well.

Hamerstrom, Frederick, Frances Hamerstrom, and Oswald E. Mattson. SHARPTAILS INTO THE SHADOWS? Wisconsin Conservation Department, Wisconsin Wildlife no. 1. 1-35 p., illus. 1952.
This pamphlet, written non-technically to lay the facts before the people of Wisconsin, points out that the open or brushy lands required by sharptails are rapidly yielding to natural succession and reforestation. Sharptails may disappear from the state in relatively few years if nothing is done to preserve their habitat. Immediate decision is needed for many areas. Some light soil tracts of low timber potentialities should be reserved and managed especially for sharptails by clear cutting and burning. In forests, large blocks of aspen or jack pine can be clear-cut in rotation to provide various seral stages close together. This is especially promising where nuclear openings already exist. In pioneer-type farm land, sharptail habitat can be created and maintained between and just beyond the fields. Wisconsin has a forest crop law to encourage timber production. A similar wildlife crop law is desirable, and may be necessary to save significant numbers of sharptails.

Keener, John M. CAPERCAILLIE IN WISCONSIN. Modern Game Breeding and Hunting Club News 22(6): 6-7. June 1952.
Background and history of the introduction. 31 birds were released on Outer Island of the Apostle group. At least 5 survived the first winter but now all have disappeared. It is hoped to try more birds.

Laycock, William E. WHY CLOSE THE SEASON? Michigan Conservation 21(5): 15-18, illus. Sept.-Oct. 1952.
Ruffed grouse recovered from a cyclic low as well in Michigan, where they had been hunted during the low, as in Wisconsin and Minnesota, where the season had been closed. In a Michigan refuge they recovered no more quickly than outside the refuge. Hunting does not seem to be a major control of grouse populations. These conclusions are based on studies in the middle and late 1940's.

Lint, Kenton C. FRANCOLINS. Modern Game Breeding and Hunting Club News 22(6): 7. June 1952.
Recommends introduction of the Abyssinian Ruppell's francolin (Francolinus africanus gutturalis) as a game bird for the U. S. The bird is hardy, exceptionally prolific, and easily reared. It is a mixed feeder (seeds, bulbs, shoots, insects) and its flesh is delicious. "Chukar Partridges can offer little competition to Ruppell's Francolins as game birds. First, I know of no other game bird as prolific as Francolins with the exception of the common semi-domestic guineafowl. One of our Francolin hens has laid seventy-two eggs consecutively, and is still laying daily."

Mackenzie, J. M. D. FLUCTUATIONS IN THE NUMBERS OF BRITISH TETRAONIDS. Journal of Animal Ecology 21(1): 128-153, graphs. May 1952.
The author presents figures on numbers of red grouse, ptarmigan, capercailzie, and blackgame bagged each year from 1834 to 1950 on many shooting moors in the British Isles. By far the greatest amount of information is for the red grouse in Scotland. The figures are discussed from several approaches, all pertaining to periodicity and its possible explanations. The 4 species fluctuate pretty much together, with peaks at 3 to 10 year intervals, usually 5 or 6. Fluctuations

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

are commonly local, but are widespread often enough to keep different areas fairly well synchronized. Game keepers' records show that disease (chiefly strongylosis) is not a cause of major fluctuations. The author suspects that major fluctuations are caused by climate acting through food supply. "...there are indications in dendrochronology that years of good tree-growth usually occur in tetraonid peak periods, while prices of hill sheep in Scotland have reached peaks in the last hundred years in those same periods...high hill sheep prices...presumably reflect the quality of the food available on the hill, and its effect on weight and wool."

Moran, P. A. P. THE STATISTICAL ANALYSIS OF GAME-BIRD RECORDS. Journal of Animal Ecology 21(1): 158-158. May 1952.

An analysis of the grouse data presented by Mackenzie, mentioned earlier in this section. It is devoted largely to working out tests of significance of correlation coefficients for use when the usual tests cannot be applied because the data are serially dependent. Tests for serial dependence are also demonstrated. Biological conclusions are not clearly stated -- all too common a failing in statistical papers. Apparently cyclic tendencies can be proven only for the red grouse. Ptarmigan and capercailzie can be shown to fluctuate with red grouse but not with blackgame, although blackgame also fluctuates with red grouse.

Patterson, Robert L. SAGE GROUSE HUNTING SEASONS. Wyoming Wild Life 16(7): 10-13, illus. July 1952.

It is recommended that sage grouse hunting seasons in the mountainous western states be held not earlier than September 20. August hunting, still prevalent in some states, results in overly heavy shooting of females and half-grown birds in areas of concentrations. Crippling loss is also higher in summer because bird dogs do not work as well then. Older birds are less palatable and less desired by hunters, but protection of breeding stock must be the main consideration.

Patterson, Robert L. THE SAGE GROUSE IN WYOMING. Sage Books, Denver, Colorado. xxiv + 341, illus. 1952. $5.00.

The author and the Wyoming Game and Fish Commission are to be congratulated on the production of this monograph on the biology and management of an important game bird that was once considered in danger of extinction. Although the book deals chiefly with a 4-year study of the sage grouse in Wyoming, especially in certain study areas, much information from other states is incorporated and literature is freely cited. Since practically all aspects of ecology and management are treated, often in detail, no effort will be made here to list the contents. One of the main conclusions is that restoration of sage grouse populations has been caused very largely by saner grazing policies for public lands. Other factors are secondary. Among the interesting features of the book are severe critiques of reclamation programs, Fish and Wildlife Service River Basin studies, predator control, and sagebrush eradication projects. Eradication of sage destroys the habitat of sage grouse, and on other grounds is considered economically undesirable and of questionable long term practicality. The book has sketches by C. W. Schwartz and many good photographs.

Smalley, Alfred E. POPULATION STUDIES OF THE RUFFED GROUSE IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, Aug. 1952.

BIRDS--TURKEY

Anonymous. FEWER WILD TURKEYS IN MISSOURI. Modern Game Breeding and Hunting Club News 22(6): 15. June 1952.

According to H. V. Terrill of the State Conservation Commission, a steady decline has been occurring, with very few turkeys left on private lands. The most recent 5-year census revealed only 2,371 turkeys in 411 flocks, while that of 1947 revealed 3,289 turkeys, about 1/3 more. A favorable factor is the increase of state and federal forest land in the state.

BIRDS--TURKEY--Continued

Latham, Roger M. WILD TURKEY RESEARCH REPORT. Pennsylvania Game News 23(4): 30, illus. July 1952.
Estimated 1951 kill in Pennsylvania was 8,962. Data are supplied on ages and sex ratios of 163 birds bagged. Most turkeys are taken in new range in the northern part of the state. The old (formerly the whole) turkey range in the southern part of the state now produces few birds. Work is under way to determine why this is true and what can be accomplished by restocking.

Stanberry, Fred W. THE TURKEY PICTURE. Florida Wildlife 6(3): 26-27, 43, illus. Aug. 1952.
Popular account of status and management of turkeys in Florida. They are still increasing and circumstances seem favorable. Since 1949, 533 have been trapped (trapping is described) and moved to protected areas. They have survived and increased in each area; about 30% of the hens have brought off broods averaging 7-8 poults each year. Transplanted birds travel 2-20 miles from the release point, usually less than 3 miles. There are about 8 million acres of good turkey range in the state, and 1 million of them are in management areas. Protection of hens is important in management; distinctions between sexes are described. 95% of the potential range is stocked, but production can be tripled. Food plots of various kinds have been used but the trend now is toward using broad-bladed, sod-forming grasses that produce seeds and green food in late winter and spring. Automatic feeders are useful at this season. Feeders also help support and localize released birds.

BIRDS--DOVES AND PIGEONS

Arnold, Jack. WHITEWING DILEMMA. Texas Game and Fish 10(10): 4-7, illus. Sept. 1952.
Whitewing doves in South Texas had built up to a population of about 900,000 in 1950. Then a freeze in January 1951 killed most of the citrus trees and returning whitewings found few nesting sites. It was feared that the population could be wiped out by hunting. Hunters were discouraged by publicity, and heavy rains further cut the kill. The nesting situation is still bad in 1952 and experts are not too optimistic, although the birds are nesting wherever they can. Predators, especially boat-tailed grackles, are said to take 3 out of 4 birds hatched. Hunting is restricted to 3 evenings, but is extremely popular. Masses of people assemble to shoot into the flights, and many individuals do not bother to search for cripples or birds that do not drop in plain sight. Loss from this cause is tremendous.

Cowan, John B. LIFE HISTORY AND PRODUCTIVITY OF A POPULATION OF WESTERN MOURNING DOVES IN CALIFORNIA. California Fish and Game 38(4): 505-521, illus. Oct. 1952.
Based on studies at Gray Lodge State Refuge, Butte County. Habits of the doves throughout the year are described, with reproduction given special attention. Breeding is virtually continuous, March to September. A single nesting requires about 30 days. A pair of doves averages 5.1 nestings per year. Ten percent of all broods are still in nests when the dove season opens on September 1, but 75% of the doves migrate away in the second week of September. Nesting success is about 64.5%, based on criterion of at least 1 young being reared to at least 12 days of age. Annual average productivity per pair is 6.3 nestlings.

Kossack, Charles. AGING MOURNING DOVES. Inland Bird Banding News 24(1): 2-3, illus. Feb. 1952.
Describes and illustrates characters used in the proposed system of determining ages of doves. An appeal is made for wide cooperation in testing and elaborating the methods. The methods depend on replacement of primaries and details of coloration.

BIRDS--DOVES AND PIGEONS--Continued

Miller, Townsend. DOVE DETECTIVES. Texas Game and Fish 10(9): 2-5, illus. Aug. 1952.
A popular article about the mourning dove banding program and some of its results. Just over 60% of the doves killed in Texas are young of the year. Less than 35% of doves killed in Texas are hatched in the state. The rest come from 20 other states. The Midwest is the most important source. In 1950 and 1951, 8338 doves were banded in Texas. Most of the 192 returns were from Texas, but a few were from Mexico and 1 was from Louisiana. The method of making standardized "Coo-Road Counts" to determine populations trends is explained.

Rensel, Jack A. THE LIFE HISTORY, ECOLOGY AND PRODUCTIVITY OF THE MOURNING DOVE IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, Aug. 1952.

Swank, Wendell G. and Chuck Mabery. DOVES AND DOVE HUNTING IN ARIZONA. Arizona Wildlife-Sportsman 23(8): 31-46, illus. Aug. 1952.
Popular account of the biology and hunting of mourning and whitewing doves. There are several excellent photographs by Swank of nesting mourning doves.

BIRDS--WATERFOWL

Anonymous. [CANADA GEESE BENEFIT WINTER WHEAT.] Virginia Commission of Game and Inland Fisheries, Educational Bulletin no. 84: 1-2. Aug. 22, 1952.
Some farmers are alarmed at the sight of flocks of geese eating winter wheat, while others believe that geese help the wheat. "Three fields of winter wheat were planted on the Hog Island Waterfowl Refuge in Surry County for the purpose of attracting geese...Character of the soil was pretty much the same and the same treatment and commercial fertilization was used on all three fields." Geese used one field heavily, one lightly, one not at all. The most-used field got off to the best start in the spring. "The harvest told an even more vivid story. When the crop was harvested, the field on which the 2,000 geese fed regularly made an average yield of 33 bushels to the acre. The field where the lesser number of geese fed brought a crop averaging 25 bushels to the acre. The field which the geese neglected entirely brought only 18 bushels to the acre." Grazing did the wheat little harm and goose droppings gave it considerable fertilization. The result was one of the best crops in the county.

Anonymous. 1952 SOUTH DAKOTA WATERFOWL BREEDING GROUND SURVEY. South Dakota Conservation Digest 19(7): 4-5. July 1952.
Distribution and abundance by species. "The density of the 1952 breeding population of ducks in South Dakota has increased 104 percent since 1951." The breeding duck population is thought to be about a million.

Ballou, Robert M. WYOMING'S WATERFOWL HARVEST. Wyoming Wild Life 16(7): 14-17, illus. July 1952.
Includes discussion of advantages of straight and split seasons, and information on how data were obtained. The 1951 game bird harvest was: ducks, 95,200; geese, 1,500; pheasants, 90,548; sage grouse, 28,046. Ducks killed are listed by species; mallard leads the list with 71.1%. Average weights are given for 9 kinds of ducks and 2 of geese. Sex ratios were 1 male to 0.88 female for mallards, 1 to 2.40 for Canada geese. Crippling loss was at least 1 out of 4. Hunters bagged 2.24 ducks per day. Drainages with heaviest hunting pressure are listed.

Dreis, Robert E. and George O. Hendrickson. WOOD DUCK PRODUCTION FROM NEST-BOXES AND NATURAL CAVITIES ON THE LAKE ODESSA AREA, IOWA, IN 1951. Iowa Bird Life 22(2): 18-22, illus. June 1952.
Data on utilization of nest boxes and natural cavities and on production and survival of broods. Nest boxes were flooded in late April by unusually high water from the Mississippi River and 13 nests of wood ducks and hooded

BIRDS—WATERFOWL—Continued

mergansers were destroyed. Following recession of flood waters, 9 wood ducks, but no mergansers, nested in boxes.—Clark G. Webster.

Dufresne, Frank. WHAT'S THE SCORE? Field and Stream 57(6): 36-37, 100-101, illus. Oct. 1952.
Popular account of the work of the flying flyway biologists, and how they make waterfowl counts from Mexico to the Arctic. Their counts, plus information from other sources, provide the factual basis for waterfowl hunting regulations.

Evans, Charles D., Arthur S. Hawkins, and William H. Marshall. MOVEMENTS OF WATERFOWL BROODS IN MANITOBA. U. S. Fish and Wildlife Service, Special Scientific Report, Wildlife no. 16: 1-47 + 19 plates. No date [April 1952.]
A detailed report of studies made in a pothole region in the summer of 1949. It treats not only the travels of broods of several species between potholes, but also the value of different sorts of potholes for different uses, and contains information on productivity, mortality, and habitat preferences of young and adult. Productivity in the area is high because of the varied types of potholes and land uses. Since a variety of types of potholes is important even to a single brood, management should concentrate on "achieving a balance between the types in an area rather than attempting to make each pothole serve all functions." Potholes might also be improved by at least partial protection from grazing.

Evenden, Fred G., Jr. WATERFOWL SEX RATIOS OBSERVED IN THE WESTERN UNITED STATES. Journal of Wildlife Management 16(3): 391-393. July 1952.

Heuer, Wayne H. THE INCIDENCE OF LEAD SHOT IN TISSUES OF WATERFOWL OF THE PACIFIC FLYWAY, WITH SPECIAL REFERENCE TO THE GREAT SALT BASIN. M. S., Utah State Agricultural College, June 1952.

Jordan, James Schuyler. LEAD POISONING IN MIGRATORY WATERFOWL, WITH SPECIAL REFERENCE TO THE MALLARD ANAS PLATYRHYNCHOS L. Ph. D. thesis, University of Michigan, 1952. 155 p. [From long abstract in Dissertation Abstracts 12(4).]
Judging from the abstract cited, a large part of the material has been presented in condensed form in Jordan and Bellrose, 1951 [Lead Poisoning in Wild Waterfowl. Ill. Nat. Hist. Survey Div., Biological Notes no. 26: 1-27]. See WR 67, p. 30.

Kleinschnitz, Ferd and Willard Flinn. DUCK BANDING IN COLORADO. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 175-177 p.

Marshall, William H. WATERFOWL OF THREE PRAIRIE POTHOLES. Flicker 24(2): 60-68. June 1952.
Three small ponds in Ramsey Co., Minnesota, were observed for 5 years. Changes caused by drought, overgrazing, and muskrat drainage are described. Mallards and blue-winged teal nested in the area. Numbers of teal dropped sharply, probably because of reduction of open water, but mallard use remained more constant. "The use of the overgrazed area by Wilson's snipe during migration increased rapidly as the degree of overgrazing increased. The ungrazed ponds were hardly utilized."

Merikallio, Einari. AINALIJÄRVI, A WATERFOWL LAKE IN CENTRAL FINLAND (Ainalijärvi — keski-Pohjanmaan lintujärvi). Suomen Riista 7: 60-71, illus. 1952.
In Finnish, with English summary. Census studies of birds of one of the best Finnish waterfowl lakes. Changesoccurring between 1916 and 1951 are discussed. Most changes were caused by man or climate. Some species of waterfowl have disappeared, others have come in.

BIRDS--WATERFOWL--Continued

Morrison, Alva. THE GREATER SNOW GOOSE. Bulletin of the Massachusetts Audubon Society 36(7): 285-291, illus. Oct. 1952.
General account, partly compiled, of the travels and numbers of this goose. Especial attention is given the St. Joachim marsh (on the St. Lawrence) where the entire population is thought to stop and feed for some time on its migration between the central Atlantic Coast and the Arctic Islands. The greater snow goose is still increasing: the breeding grounds are yet remote from man, and adequate though incomplete protection is afforded on the wintering grounds and at St. Joachim. The population, down to about 3000 in 1900, is now roughly 45,000.

Nelson, Noland F. TRENDS IN HUNTING PRESSURE AND WATERFOWL KILL ON PUBLIC SHOOTING GROUNDS IN UTAH. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 178-180 p.

Steiner, J. Thomas. MISSISSIPPI'S MALLARD MOTEL. Mississippi Game and Fish 16(3): 6-7, illus. Oct. 1952.
Story of the refuge and public hunting areas at Sardis Reservoir, present and planned developments. Carefully planned and managed subimpoundments around this flood control reservoir are extremely attractive to waterfowl.

Stokes, James D. WATERFOWL MANAGEMENT PROGRAM FOR CALIFORNIA. Proceedings of 31st Annual Conference of Western Association of State Game and Fish Commissioners, April 30-May 2, 1951. 181-183 p.

Teer, James G. CONTROLLED WATERFOWL HUNTING ON A STATE-OWNED PUBLIC SHOOTING GROUND, FORNEY LAKE, IOWA, 1950. Iowa State College Journal of Science 26(4): 541-553, map and graph. July 1952.
Controlled hunting was instituted because intense hunting pressure had led to crowding and poor success. The results were generally satisfactory. Data are presented on the plan of operation, number of hunters, and number of waterfowl killed each day, locality of hunter residence, harvest (by species), productivity of different blinds, relationship of hunting pressure to success (slight), and costs. A charge of 50¢ per hunter per day should cover expenses, including construction of blinds.

Teer, James G. THE 1950 FALL MIGRATION OF WATERFOWL THROUGH THE FORNEY AREA, FREMONT COUNTY, IOWA. Iowa Bird Life 22(3): 34-37. Sept. 1952.
Numbers of the various species and dates of their presence.

Vessels, Jay. ALOOFNESS ALOFT. Texas Game and Fish 10(10): 27-29, illus. Sept. 1952.
Popular but factual account of status and biology of the mottled duck. The population has suffered from overgrazing of the nesting areas, drought, and nest predation by domestic dogs. The bird is a persistent layer, however. Many are shot during the first part of the waterfowl season, before most migrants arrive.

Williams, C. S., compiler. 1952 STATUS REPORT OF WATERFOWL. U. S. Fish and Wildlife Service. 1-59 p. 1952.
Quantitative report prepared to serve as basis for regulations. The material is derived from harvest statistics, winter survey, and breeding ground survey. Data are organized by flyways and species, and are largely tabular. There are conclusions for each section and a summary for each flyway. Certain decreases are noted, but the general situation is favorable for the 1952 hunting season.

Wolf, Kenneth E. SOME EFFECTS OF FLUCTUATING AND FALLING WATER LEVELS ON WATERFOWL PRODUCTION. M. S., Utah State Agricultural College, June 1952.

BIRDS--WATERFOWL--Continued

Yancey, Richard K. CATAHOULA LAKE. Louisiana Conservationist 4(9-10): 10-12, illus. May-June 1952.

Description of this controversial area; seasonal changes and their effects on man's uses; pollution and lead poisoning problems; waterfowl census and bag check data, 1950-51. A 21,000-acre area, Catahoula floods in late fall and dries out in the summer. While dry it produces vast quantities of chufa and wild millet that feed thousands of waterfowl (usually around 50,000) in the winter. "It provides excellent public duck shooting during the winter, good grazing for hogs and cattle in the late summer, and fine sport and commercial fishing during the remainder of the year." These uses all go well together. [There are proposals to flood the area permanently, which would greatly lower its waterfowl value.]

BIRDS--CRANES, RAILS, SHOREBIRDS

Allen, Robert Porter. THE WHOOPING CRANE. National Audubon Society (1000 5th Avenue, N. Y. 28, N. Y.), Research Report no. 3. xxvi + 246 p., illus. July 1952. $3.00.

At the time this great volume was written the apparent discovery of the whooping crane's breeding ground had not been made. Except for this, it is difficult to believe that any known or deduced information about the bird is omitted from the book. The author and his many cooperators, all of whom are credited, have brought together more facts about the crane and its environment than one would have thought possible. A vast body of data from the literature and personal interviews has been compiled critically and combined with facts obtained from extensive field work. Chapter headings are: Distribution; Abundance; Migration; Food Habits; Winter Life; The Breeding Cycle; Molts, Plumages and Anatomy; Survival, Protection and Conservation. Each chapter is well summarized. The author believes that the total population in historic times was never more than 1400. Present population is about 35, and the recent rate of increase is only 0.44 birds per year. The crane has suffered from slaughter and destruction of breeding grounds, but perhaps the chief factor that has brought it so near extinction is its own intolerance of civilization. Recommendations include: expansion of Aransas Refuge and improvement of conditions there; new refuge along at least 50 miles of the Platte River in Nebraska; education of public along migration route.

Bennett, Logan J. JACKSNIPE DILEMMA. Field and Stream 57(4): 46, 91-92. Aug. 1952.

Evidence that a spell of freezing weather on the Gulf Coast in January 1940 wiped out a large part of the snipe population. It is believed that large numbers of migrating snipe piled up there by a cold front starved or froze to death. Survivors are thought to have spread so thinly over the breeding range that many could not find mates. Populations are gradually building up, especially in the western Great Lakes region, and eventually it should be possible to open the season.

Gullion, Gordon W. SOME DISEASES AND PARASITES OF AMERICAN COOTS. California Fish and Game 38(3): 421-423. July 1952.

Summary of published reports and new records for aspergillosis, mites, and roundworm (Amidostomum). Aspergillosis and roundworms may have been lethal in one bird each, but in general severe pathology would be expected only when vitality was low.

OTHER BIRDS

Allen, Robert W. and Margaret M. Nice. A STUDY OF THE BREEDING BIOLOGY OF THE PURPLE MARTIN (PROGNE SUBIS). American Midland Naturalist 47(3): 606-665, illus. May 1952.

This monograph includes virtually all that is known about the biology of the purple martin except that foods, distribution, taxonomy, and morphology are not treated. Much original work is reported and the literature is summarized.

OTHER BIRDS--Continued

Nesting and reproductive behavior are discussed in detail, as are banding records, migration, correlation of weather with migration, and survival problems. Comparisons are made of the nesting behavior of 14 species of swallows, and of the nesting success of 14 hole-nesting birds.

Burns, Bartley, J. FOOD OF A FAMILY OF GREAT HORNED OWLS, BUBO VIRGINIANUS, IN FLORIDA. Auk 69(1): 86-87. Jan. 1952.

Greenhalgh, Clifton M. FOOD HABITS OF THE CALIFORNIA GULL IN UTAH. Condor 54(5): 302-308, graph. Sept. 1952.
Based on stomach contents of 529 gulls collected in 4 years near Salt Lake City and the Bear River Refuge. Insects made up most of the diet, but carrion and garbage constituted 12.7%, cherries 5.3% and birds and bird eggs 4.5%. Many of the Refuge gulls contained birds and eggs. "In recent years [these gulls] have become concentrated on man-made refuges close to nesting waterfowl and also near extensive orchards...They have adjusted themselves to a food supply somewhat different from that formerly utilized, provided by man himself, and accordingly locally they do serious damage."

Phillips, Richard E. and Charles M. Kirkpatrick. INDIANA HAWKS AND OWLS. Indiana Department of Conservation and Purdue University Agricultural Extension Service. 1-37 p., illus. No date. [1952.]
A popular and copiously illustrated bulletin on the identification, habits, and values of these birds. It contains color plates, sketches, and food habits diagrams taken from various sources. State law protects most hawks and owls, but the law is hard to enforce and ineffective. The authors propose altering the law to protect all hawks and owls except that "nothing herein contained shall be deemed to make it unlawful for the owner or occupant of the land to kill hawks or owls when in the act of destroying poultry, the property of said owner or occupant, on the land owned or occupied by said owner or occupant."

Randle, Worth and Ronald Austing. ECOLOGICAL NOTES ON LONG-EARED AND SAW-WHET OWLS IN SOUTHWESTERN OHIO. Ecology 33(3): 422-426. July 1952.
Winter observations on habitat, roosting, flushing, and foods. Habits and foods are compared. Both owls live in the same area, but the long-eared owls forage chiefly over fields while the saw-whets forage chiefly in or near woods, catching many Peromyscus leucopus but no Cryptotis.

Shepard, Paul, Jr. CAN THE CAHOW SURVIVE? Natural History 61(7): 302-305, illus. Sept. 1952.
This Bermudan petrel was long considered extinct and was only recently rediscovered. The author studied its habitat and habits, but could find only on pair. Continued existence of the species appears to depend on control of rats and education of local people. Photos illustrate the habitat and burrows.

Skelton, Kathleen Green. CAPE MAY'S FIRING LINE. Nature Magazine 45(7): 370-373, 383, illus. Aug.-Sept. 1952.
Migrating hawks are shot in large numbers at Cape May, New Jersey. Often there is no attempt to dispatch cripples. "Protected" species are shot as well as others and shooting regulations are otherwise violated, but according to the author no real attempt is made at enforcement. Some of the shooting is done under "vermin licenses." The solution proposed is a no-shooting zone established by local ordinances and supported by public opinion. It is suggested that the Chamber of Commerce could achieve this if enough bird clubs expressed their opinions.

REPTILES AND AMPHIBIANS

Baldauf, Richard J. CLIMATIC FACTORS INFLUENCING THE BREEDING MIGRATION OF THE SPOTTED SALAMANDER, AMBYSTOMA MACULATUM (SHAW). Copeia 1952(3): 178-181, graphs. Sept. 1952.
Humidity and temperature are the most important factors. "...given the proper temperature, the necessary moisture may be supplied by rainfall, snow water run-off, or water vapor in the air."

REPTILES AND AMPHIBIANS—Continued

Bragg, Arthur N. AMPHIBIANS OF McCURTAIN COUNTY, OKLAHOMA. Wasmann Journal of Biology 10(2): 241-250. Summer 1952.
List, with notes on taxonomy, distribution, and biotic areas.

Brattstrom, Bayard H. THE FOOD OF THE NIGHTLIZARDS, GENUS XANTUSIA. Copeia 1952(3): 168-172. Sept. 1952.
Based on examination of digestive tracts of 657 specimens representing almost all forms of the genus. These lizards are mainly insectivorous, but certain forms eat quite a bit of plant material.

Bullock, Theodore H. and Raymond B. Cowles. PHYSIOLOGY OF AN INFRARED RECEPTOR: THE FACIAL PIT OF PIT VIPERS. Science 115(2994): 541-543. May 16, 1952.
A nerve from the pit was connected to a recording machine and impulses from the pit were measured. The pit proved sensitive to touch, air movement, and temperature of the snake's body, but it was far more sensitive to radiant heat. It responded to the warmth of a human hand 30 cm. away. Cold objects held near depressed nervous activity. Motion of a stimulating object caused a reaction. Quantitative results are given. The physical basis of the pit's sensitivity is discussed, but no specific conclusion is reached.

Dowling, Herndon Glenn. A TAXONOMIC STUDY OF THE AMERICAN REPRESENTATIVES OF THE GENUS ELAPHE FITZINGER, WITH PARTICULAR ATTENTION TO THE FORMS OCCURRING IN MEXICO AND CENTRAL AMERICA. Ph. D. thesis, University of Michigan 1951. 234 p. [From abstract in Dissertation Abstracts 12(4).]
Treats all American rat snakes and gives considerable attention to supra-specific groups and their relationships. The treatment of U. S. forms differs from that of previous authors in several respects, especially in regard to status and names of subspecies. Several recently described forms are not recognized.

Dowling, Herndon G. A TAXONOMIC STUDY OF THE RATSNAKES, GENUS ELAPHE FITZINGER. IV. A CHECK LIST OF THE AMERICAN FORMS. University of Michigan, Occasional Papers of the Museum of Zoology no. 541: 1-12. Oct. 1952.
This list presents statements of ranges, discussions of types and type localities, and synonymies. There is no key. Various taxonomic changes are introduced but reasons for them are not given. Several recently described U. S. races are not recognized.

Edgren, Richard A. A SYNOPSIS OF THE SNAKES OF THE GENUS HETERODON, WITH THE DIAGNOSIS OF A NEW RACE OF HETERODON NASICUS BAIRD AND GIRARD. Natural History Miscellanea no. 112. 1-4 p. Sept. 1952.
Includes key to all 5 recognized forms of the genus. Given for each form are diagnosis, range, and remarks. The synopsis is based on a doctoral thesis to be published later.

Fox, Wade. SEASONAL VARIATION IN THE MALE REPRODUCTIVE SYSTEM OF PACIFIC COAST GARTER SNAKES. Journal of Morphology 90(3): 481-553, illus. May 1952.
A voluminous and important study based upon much histological work. Comparisons are made with other reptiles and many references are cited.

Gordon, Robert E. A CONTRIBUTION TO THE LIFE HISTORY AND ECOLOGY OF THE PLETHODONTID SALAMANDER ANEIDES AENEUS (COPE AND PACKARD). American Midland Naturalist 47(3): 666-701, illus. May 1952.
Distribution; detailed account of habitat (chiefly rock crevices in study areas, though trees are used elsewhere); relations with animal associates; life history and annual cycle; seasonal dispersal and aggregation; ability of A. aeneus and Plethodon j. melaventris to resist desiccation in laboratory tests; interpretation of distribution and history.

REPTILES AND AMPHIBIANS—Continued

Hamlett, George W. D. NOTES ON BREEDING AND REPRODUCTION IN THE LIZARD ANOLIS CAROLINENSIS. Copeia 1952(3): 183-185, graph. Sept. 1952.
Numerous data on reproduction are given. The chief conclusion is that females lay one egg every 2 weeks throughout the warm season; this condition apparently is unknown in other lizards. There is probably separate insemination for each egg. Embryonic development is well under way when the egg is laid.

Klauber, Laurence M. TAXONOMIC STUDIES OF THE RATTLESNAKES OF MAINLAND MEXICO. Bulletins of the Zoological Society of San Diego no. 26. 1-143 p., illus. Aug. 1952.
Detailed, authoritative, revisionary study. It treats the status, distribution, and variation of many forms, describes new forms, and includes keys and tables of variation.

Zweifel, Richard G. PATTERN VARIATION AND EVOLUTION OF THE MOUNTAIN KINGSNAKE, LAMPROPELTIS ZONATA. Copeia 1952(3): 152-168, illus. Sept. 1952.
Thorough revision of the species, with descriptions of 2 new races. Habitat of each form is discussed.

FISHES

Allan, Philip F. HOW TO GROW MINNOWS. Published by author, Box 9343, Fort Worth, Texas. v + 63 p., illus. 1952. $1.00.
The author, a regional biologist of the Soil Conservation Service, has provided a great deal of practical information on everything from planning the pond and choosing the breeding stock to fertilization, pest control, and minnow processing. Many pictures and diagrams.

LaMonte, Francesca. MARINE GAME FISHES OF THE WORLD. Doubleday & Co., Garden City, N. Y. 1-190, illus. 1952. $3.50.
Written with the help of the International Game Fish Association, this attractive little book is intended for the serious angler. It begins with a long table of catches of record game fishes. Following, and making the bulk of the book, is concise information in outline form on the major marine game fishes of the world. The treatment of a species or group consists of: Names, Distribution, Distinguishing characters, Size (weight), Food, Habits, Angling (tips), Commercial (values, if any). Species seldom caught or seldom recognized by anglers are usually omitted, as are many species of large, homogeneous groups. The final section is a discussion of game fish areas of the world, with brief statements on climate, important fishes, and accomodations. The 69 plates, a vital feature of the book, are by Janet Roemhild. About 140 species are illustrated. Many of the plates are in color. The book is pocket-size, 7½ x 4½ inches, has an index, and is printed entirely on glossy paper.

INVERTEBRATES

Graham, Samuel. FOREST ENTOMOLOGY. Third edition. McGraw-Hill Book Co., N. Y. 351 p., illus. 1952. $6.00. [From review by R. F. Anderson, Journal of Forestry 50(9).]
Revision of "Principles of Forest Entomology." As the older title indicates, the book is concerned with principles and is not a manual or handbook. Contains much valuable, up-to-date information.

Johnson, Bert Marvin. THE CENTIPEDS AND MILLIPEDS OF MICHIGAN. Ph. D. thesis, University of Michigan, 1952. 488 p. [From long abstract in Dissertation Abstracts 12(4).]
Taxonomic and distributional monograph with keys and much information on ecology and life history of certain forms.

INVERTEBRATES--Continued

Keen, A. Myra and John C. Pearson. ILLUSTRATED KEY TO WEST NORTH AMERICAN GASTROPOD GENERA. Stanford University Press. 39 p., illus. 1952. $1.50. [From Nature Magazine 45(8).]

"This key to the marine gastropod mollusks - snails and slugs - found from San Diego to Alaska, covers 240 of the Pacific Coast molluscan genera. It is based on shell characteristics only, and the illustrations show representatives of all the genera."

Stefferud, Alfred, editor. INSECTS, THE YEARBOOK OF AGRICULTURE 1952. U. S. Department of Agriculture. xviii + 780 p., illus. + 72 color plates with text. 1952. $2.50 from Superintendent of Documents.

The scope of this book of 114 articles is so broad that no title other than "Insects" is appropriate. Information is given on how to study insects, beneficial insects, biological control, and many other topics; but the bulk of the volume consists of accounts of the principal pests and how to control them. Insecticides and safeguards in their use are treated in detail and sources of further information are listed. Of particular value to wildlife biologists is the chapter "Insects and Wildlife," a group of 3 papers: "Insects and the Lower Vertebrates" by O. B. Cope; "Some Insect Pests of Wildlife" by J. P. Linduska and A. W. Lindquist; and "Birds, Beasts and Bugs" by E. R. Kalmbach. Cope's paper deals with the relation of insects (and insecticides) to fishes, amphibians, and reptiles, with consideration of biological control. Linduska and Lindquist discuss insect parasites of wildlife and disease transmission. They provide an extensive bibliography. Kalmbach cites many examples of heavy predation on insects by birds and mammals.--R. T. Mitchell.

Traub, Robert. SIPHONAPTERA FROM CENTRAL AMERICA AND MEXICO. A MORPHOLOGICAL STUDY OF THE AEDEAGUS WITH DESCRIPTIONS OF NEW GENERA AND SPECIES. Chicago Natural History Museum. Fieldiana: Zoology Memoirs I. 127 p., illus. 1950. $4.00. [From review by Robert Matheson, Quarterly Review of Biology 27(1).]

Taxonomic study of previously known species and 25 new ones.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Meyers, William A. THE EFFECT OF BRUSH CONTROL SPRAYING ON THE SPECIES COMPOSITION OF A SCRUB OAK COMMUNITY OF A POWER LINE RIGHT-OF-WAY IN RELATION TO ITS GAME FOOD PRODUCTION. M. S. thesis, Pennsylvania State College, Jan. 1952.

Pyenson, L. L. ELEMENTS OF PLANT PROTECTION. John Wiley & Sons, N. Y. 538 p. 1951. $4.96. [From review by R. B. Friend, Ecology 33(3).]

"...this book is pointed to the last year of secondary school or the first year of college as well as to the agriculturist." "There are four chapters on the biology of insects, a succeeding chapter on invertebrates other than insects, five chapters on the control of insects and other invertebrates, one chapter on mammals and birds, and a following one on the control of vertebrates... Then there are six chapters...on weeds. The last three chapters...are devoted to equipment for applying chemicals used to combat pests." The book discusses the subject matter broadly, soundly, and with clarity.

Stevens, O. A. and Leo G. Rock. OUTLINE FOR ECOLOGICAL LIFE HISTORY STUDIES OF HERBACEOUS PLANTS. Ecology 33(3): 415-422. July 1952.

Suggestions and numerous classified references.

Went, F. W., G. Juhren, and M. C. Juhren. FIRE AND BIOTIC FACTORS AFFECTING GERMINATION. Ecology 33(3): 351-364, illus. July 1952.

Germination of weeds and chaparral species in relation to fire, climate, and competition. Contains interesting information on how some species inhibit the germination of others.

VEGETATION--FLORAS AND COMMUNITIES

Benson, Lyman. THE CACTI OF ARIZONA. Second edition. University of Arizona Press. xiv + 134 p., illus. 1950. $4.00. [From review by C. P. Swanson, Quarterly Review of Biology 27(1).]

Good keys, ample photographs, and distribution maps make it possible for even an amateur to identify the species he finds.

Blackburn, Benjamin. TREES AND SHRUBS IN EASTERN NORTH AMERICA. KEYS TO THE WILD AND CULTIVATED WOODY PLANTS GROWING IN THE TEMPERATE REGIONS EXCLUSIVE OF THE CONIFERS. Oxford University Press, N. Y. 11, N. Y. 358 p., illus. 1952. $6.00. [From review by W. M. Harlow, Journal of Forestry 50(9).]

Keys to somewhat more than 2,300 species and variations of native and imported woody plants. These keys do not depend on presence of flowers and fruit. They are based chiefly upon features of leaves and branchlets of the current season. "It is much more difficult to construct such keys, but they are of more value to the user, particularly the layman for whom the essentially nontechnical language of these keys is especially suited." General range of each species is indicated. The book has 8 line cuts. [Harlow expresses belief that these keys will work, but it seems evident that keys of the type described will be of limited value in identifying species of difficult groups.]

Davis, Ray J. and collaborators. FLORA OF IDAHO. Wm. C. Brown Company, Dubuque, Iowa. 828 p. 1952. $7.70.

A complete flora with keys, descriptions, statements of ranges, and occasional remarks on special characteristics. Also has an account of the plant geography of the State.--Neil Hotchkiss.

Egler, Frank E. SOUTHEAST SALINE EVERGLADES VEGETATION, FLORIDA, AND ITS MANAGEMENT. Vegetatio Acta Geo-botanica (W. Junk, Den Haag) 3(4-5): 213-265, illus. 1950. [1952.]

This is a frankly controversial paper that should be both informative and stimulating to anyone concerned with the physiography, ecology, or utilization of the area treated. It is chiefly an analysis of the processes and factors (such as climate, soils, fire, water levels, and human interference) that have made this part of the country what it is and are still influencing its development. Specific areas are discussed as well as the various vegetative types from pine to mangrove, and always causes and effects and successions are emphasized. The more controversial points pertain to the author's views on plant climaxes and associations. Wildlife values, and the Everglades National Park are mentioned at several places.

Linsdale, Mary Ann, John Thomas Howell and Jean M. Linsdale. PLANTS OF THE TOIYABE MOUNTAINS AREA, NEVADA. Wasmann Journal of Biology 10(2): 129-200, illus. Summer 1952.

Description of area and its major habitats; briefly annotated list of 505 species and varieties; many good photographs of habitats.

Merkle, John. AN ANALYSIS OF A PINYON-JUNIPER COMMUNITY AT GRAND CANYON, ARIZONA. Ecology 33(3): 375-384, illus. July 1952.

VEGETATION--FOREST

Anonymous. COMMON TREES OF PENNSYLVANIA. Pennsylvania Department of Forests and Waters, Division of Forest Research. 55 p., illus. 1952. [From Journal of Forestry 50(8).]

Anonymous. THE PROGRESS OF FORESTRY - 1945 TO 1950. American Forestry Association, Washington, D. C. 90 p. 1951. $3.00. [From Journal of Soil and Water Conservation 7(3).]

Trends and statistics. In the 5-year period reviewed, acceptance and application of forestry principles reached the greatest heights in American history.

VEGETATION--FOREST--Continued

Decker, Kenneth. CONSERVATION OF FOREST RESOURCES. University of California, Bureau of Public Administration, Bulletin no. 9. 30 p. 1951. $1.00. [From Journal of Forestry 50(5).]

Dickinson, S. K., Jr., A. G. Horn, and P. C. Guilkey. THE FOREST RESOURCE OF BELTRAMI COUNTY [MINNESOTA]. Office of Iron Range Resources and Rehabilitation, 624 State Office Building, St. Paul 1, Minnesota. 1-66 p., illus. 1952.
Area, ownership, stands, growth, drain, allowable cut, management.

Diller, Jesse D. THE PLANTING AND CARE OF BLIGHT-RESISTANT CHESTNUTS FOR FOREST TREES. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering, Forest Pathology Special Release no. 15. 1-7 p., illus. Revised Dec. 1950.
Similar to but less detailed than the following paper. Discusses site selection, plant indicators of good sites, varieties to plant, how to plant and how to get established, rate of growth.

Diller, Jesse D. CHINESE CHESTNUTS FOR WILDLIFE AND FARM WOOD LOTS: Virginia Wildlife 13(10): 11-13, illus. Oct. 1952.
A Department of Agriculture expert tells of the development of hardy strains and how to get them established in the field. A map shows the regions of the U. S. in which particular strains will succeed. Planting and care are described. Site requirements are exacting: deep, fertile, well-drained soil. Plant indicators of suitable sites are listed. Once a good site is selected, seedlings are planted at 10 x 10 foot spacing and all other trees or tall shrubs in the area are girdled. The plantation should be protected from livestock, rabbits, and fire. Once established, the species will spread by natural means, sometimes as much as ½ mile. A 55-year old plantation of 12 acres in Virginia affords the best squirrel hunting in the county. The wood is decay-resistant and rich in tannic acid.

Fisher, J. N., A. W. Jorgensen, and H. C. Allman. WISCONSIN'S FORESTS. Wisconsin Conservation Department. 24 p. Date? [From Journal of Forestry 50(8).]

Forest Survey Organization. FOREST STATISTICS OF EASTERN KENTUCKY. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio), Forest Survey Release no. 12: 1-19. July 1952.
Tabular data on ownership, volume of different classes, etc.

Forest Survey Organization. FOREST STATISTICS OF KENTUCKY. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio), Forest Survey Release no. 13: 1-39, maps and graphs. Sept. 1952.
Largely tabular. Timber is not being cut too rapidly--rather, the forests are not growing enough, and too much of the growth is on low-quality trees. Forests of the state could support 2 to 3 times as much saw timber and growing stock if properly managed. "Forests of Kentucky are not likely to improve appreciably in quality until most of the forest land is protected from fire and grazing and until most of the forest landowners and woods operators accept improved cutting practices."

Forest Survey Staff. FOREST STATISTICS FOR THE COAST RANGE PINE SUBREGION IN CALIFORNIA. U. S. Forest Service, California Forest and Range Experiment Station, Berkeley, Forest Survey Release no. 12: 1-48, illus. April 1952.
"This release presents statistics of forest areas, timber volumes, growth, drain, and ownership for the Coast Range Pine subregion, as of 1948." The area covered extends from San Francisco Bay to the Oregon line. A colored map shows generalized types and age classes of timber stands. The subregion contains nearly 1.5 million acres of mature and overmature timber, one of the largest blocks of virgin timber in California.

VEGETATION--FOREST--Continued

Hills, G. A. THE CLASSIFICATION AND EVALUATION OF SITE FOR FORESTRY. Ontario Department of Lands and Forests, Research Report no. 24. vi + 41 p., illus. Aug. 1952.

"Foresters throughout the world have long been interested in site classification. Many different approaches have been made to this problem...However, in none of these has the worker given practical consideration to the total site complex, although some have given lip-service to this approach. The present report presents a workable field-tested system of total site classification...The University of Toronto Forest is used in this paper as an example to demonstrate, more concretely, the role of total site in forestry."

Lane, Ferdinand C. THE STORY OF TREES. Doubleday & Co., Garden City, N. Y. 1-384, illus. 1952. $5.00.

There is scarcely anything pertaining to trees, except their identification, that this book does not touch. Written for easy and entertaining reading, it embodies so vast a store of interesting information that a review can mention but a few of the subjects. From folk lore to forestry, from acacia to zaman, it tells what the public might wish to know about trees of the world. Some of the topics may be listed: Prehistoric forests. How forests survived in coal. The world's greatest forests. The world's oldest trees. Trees as deities. Growth rings as record and prophecy. Fire fighters and controls. Medicinal trees. Poisonous trees. The beverage trees. From stone ax to helicopter. Cabinet woods and tropic favorites. Forestry-A modern science. Weed, wolf, and nurse trees. Federal, state, and communal forests. How trees control climates. From pulp to paper. Technical men may find minor faults with this book, but it should be highly useful in school libraries.

Limstrom, G. A. and G. H. Deitschman. RECLAIMING ILLINOIS STRIP COAL LANDS BY FOREST PLANTING. Agricultural Experiment Station, Urbana, Ill., Bulletin 547. 50 p., illus. 1951. [From review by W. C. Bramble, Journal of Forestry 50(5).]

Lynch, Donald W. FOREST TREE PLANTING IN THE INLAND EMPIRE. U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station, Miscellaneous Publication no. 5. 1-22 p., illus. July 1952.

Practical, detailed instructions for planting trees in the Northern Rocky Mountain region.

Moravets, F. L. FOREST STATISTICS FOR COWLITZ COUNTY, WASHINGTON. U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station (Portland, Oregon), Forest Survey Report no. 105. ii + 24 p., map and graphs. Aug. 1952.

Data, mostly tabular, on forest ownership, types, and condition.

Rotty, Roland. FOREST AND SHELTERBELT PLANTING IN THE UNITED STATES DURING 1951 (July 1, 1950 - June 30, 1951). U. S. Forest Service. 5 p. 1951. [See also paper of same author and similar title in Journal of Forestry 50(8): 605-608. Aug. 1952.]

Wray, Robert D. and Wayne G. Banks. FOREST STATISTICS FOR NEW YORK FOREST DISTRICT NO. 7. U. S. Forest Service, Northeastern Forest Experiment Station, Forest Statistics Series, New York no. 2. ii + 17 p. July 1952.

This district contains only St. Lawrence County. Data are largely tabular.

VEGETATION--PASTURE AND RANGE

Glendening, George E. SOME QUANTITATIVE DATA ON THE INCREASE OF MESQUITE AND CACTUS ON A DESERT GRASSLAND RANGE IN SOUTHERN ARIZONA. Ecology 33(3): 319-328, illus. July 1952.

Regardless of grazing pressure, mesquite invaded upland grasslands, nearly eliminated the grass, and created conditions that led to invasion of cactus. These conditions are common in the region. The changes greatly reduce grazing value. Artificial control seems the only cure.

VEGETATION--WET-LAND

Batson, W. T., Jr. THE RUSHES OF NORTH AND SOUTH CAROLINA. Journal of the Elisha Mitchell Scientific Society 68(1): 93-104, illus. June 1952.
A key, drawings of all but one species, and notes on habitats and ranges aid in the identification of 28 species of Juncus.--N. Hotchkiss.

Ladin, Donald H. COMMERCIAL HARVESTING AND UTILIZATION OF WAPATO IN MINNESOTA. Flicker 24(2): 72-74. June 1952.
The larger tubers of Sagittaria latifolia are dug by hand and shipped to cities for sale to Chinese. The number of small tubers left seems adequate to feed muskrats and waterfowl and to provide seed stock, for production is not diminishing.

Luethy, Don R. 2.4-D VS. THE HYACINTH. Florida Wildlife 6(3): 22-24, illus. Aug. 1952.
The Florida Game and Fresh Water Fish Commission is attacking the water hyacinth on public waters with 2.4-D sprayed from plane and boat. The cost is shared by the local people. Mechanical control methods cost $10-$30 per acre, but the chemical method costs only $2-$4 per acre. The work is still on a small scale, but in 4 months 1800 acres have been treated on 15 lakes. Follow-up treatments are usually necessary to kill marginal plants and new seedlings.

LAND, SOILS, WATER, AND CLIMATE

Brittain, Robert. LET THERE BE BREAD. Simon and Schuster, N. Y. 243 p. 1952. $3.50. [From Journal of Soil and Water Conservation 7(3).]
Another of the books that assure us that enough food can be produced to feed the world's expanding population and tells what developments will be necessary to accomplish this.

Cottam, Walter P. IS UTAH SAHARA BOUND? Conservation in the Americas no. 12: 3-23. April-July 1952.
Reviews in detail the overgrazing and soil erosion that have devastated large areas of the state, and points out the present conflicts and inconsistencies that bar effective improvement. Much better integration of official programs is needed, but beyond this the only cure is education of the public for better land use and support of revegetation.

Greene, Lee S. and Rene de Visme Williamson, editors. RESOURCES AND POLICY - CURRENT ISSUES IN CONSERVATION. Kallman Publishing Co., Gainesville, Fla. 167 p. 1951. $2.00. [From review by S. W. Allen, Journal of Forestry 50(5).]
A set of 8 papers centered around the politics and policies of resource use and development. Subjects include the human population problem, the need and feasibility of increasing productivity of resources, policies in forest land management, administration of federal lands, planning and policy in river basin programs, and the politics of conservation. The papers are thoughtful and critical, written from broad viewpoints. "This whole collection of essays furnishes tough but rewarding reading for foresters and other natural resource 'experts' who know little of bureau, regional, and party politics."

McConkey, O. M. CONSERVATION IN CANADA. J. M. Dent & Sons, Toronto 5, Ontario. 215 p., illus. 1952. $3.50. [From review by L. Besley, Journal of Forestry 50(9).]
Use and misuse of Canada's soil, water, and vegetation. "The descriptions of soil composition and structure and the effects of wind, water, and different crops upon the soil are graphic and clear. Especially good is the treatment of grasses and legumes which build up the physical properties of the soil and increase its fertility. The reader is clearly informed not only as to what measures should be taken to protect and improve the soil but also exactly why each such measure will have the desired effect...The author places special emphasis on the protection of the headwaters and upper watersheds and good cropping practices in the lower watersheds." Chapters on forests, wildlife, recreation, etc. are too brief to be of great value.

LAND, SOILS, WATER, AND CLIMATE--Continued

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